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New York, Thursday,

3

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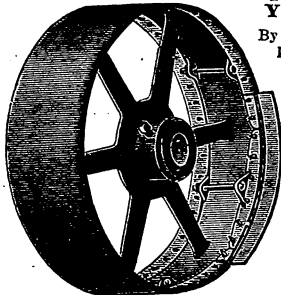
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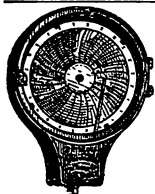
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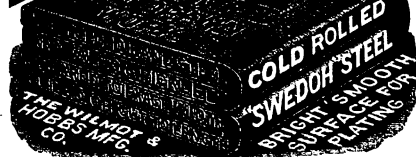
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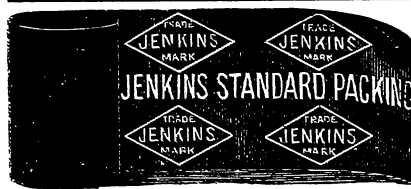
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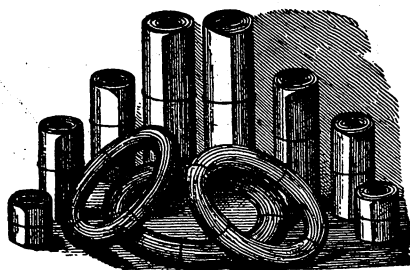
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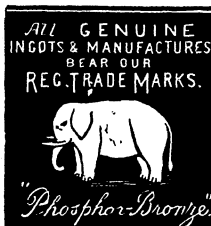
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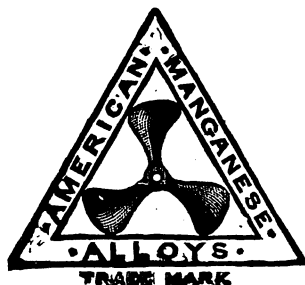
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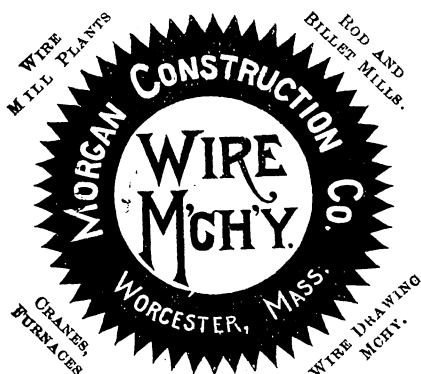
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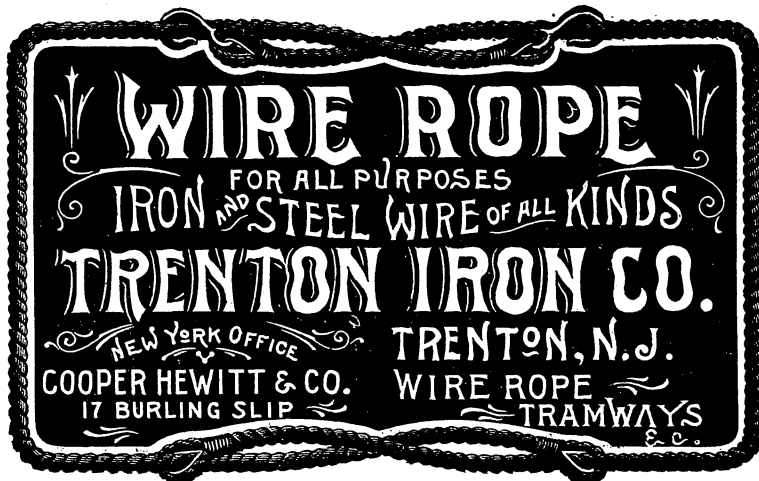
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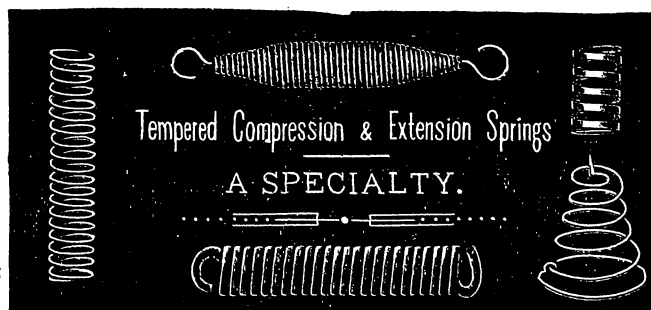


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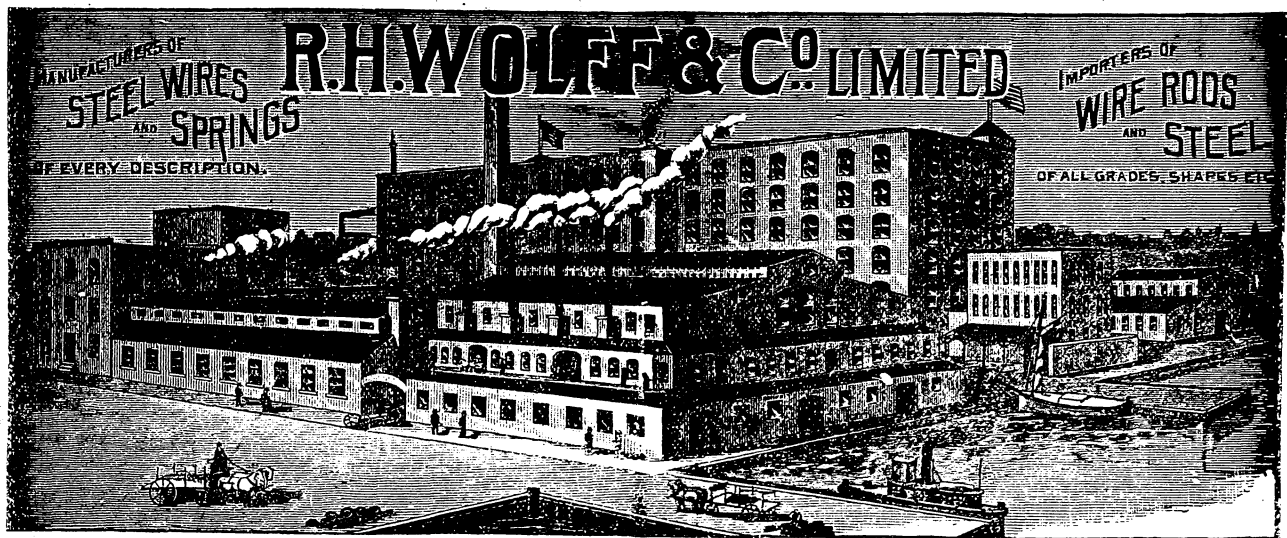
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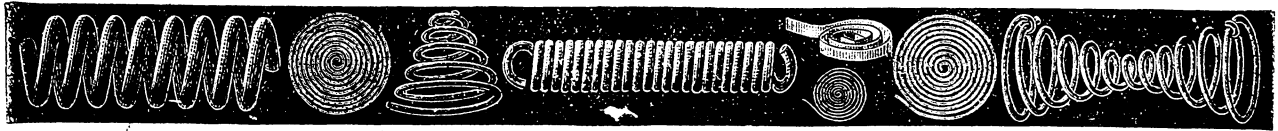
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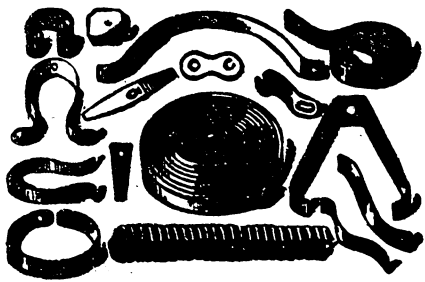
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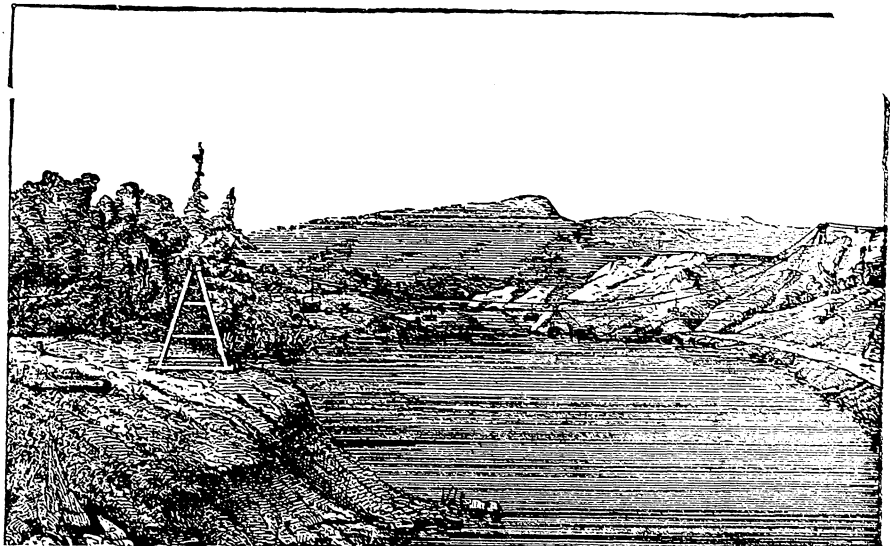
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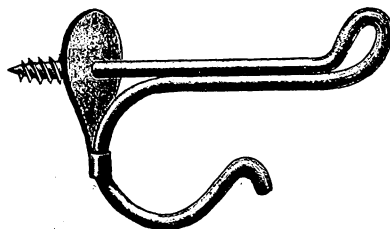
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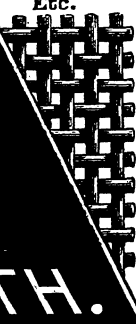
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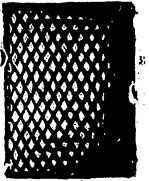


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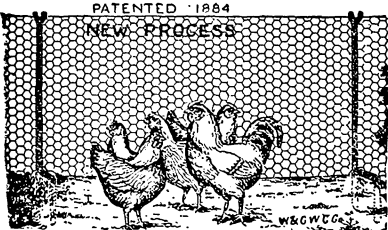
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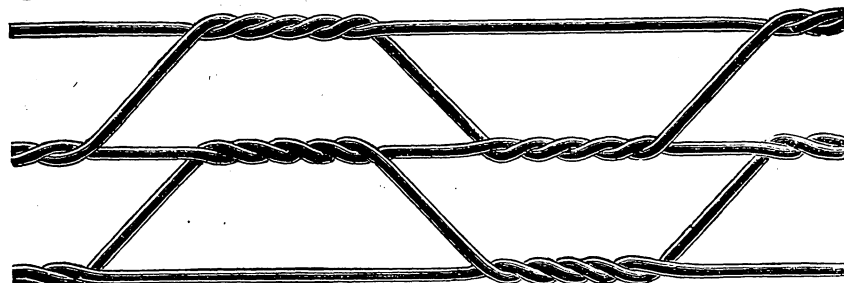
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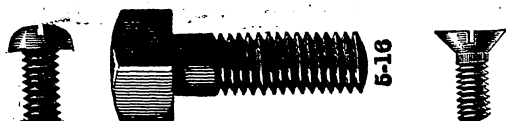
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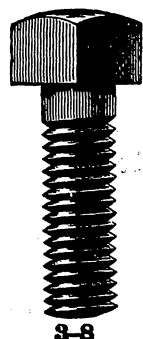
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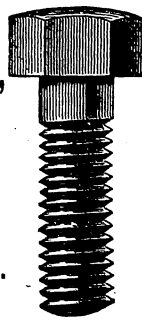
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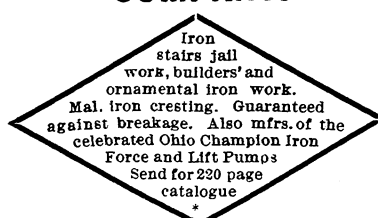
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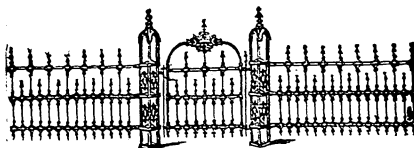
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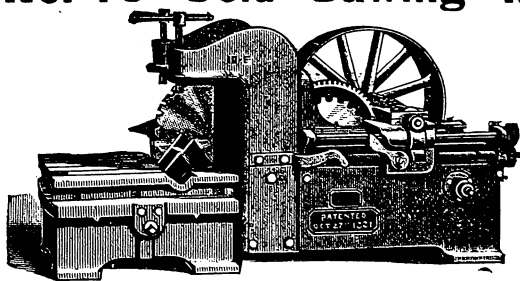
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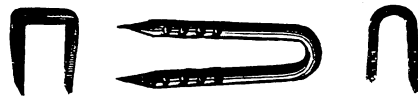
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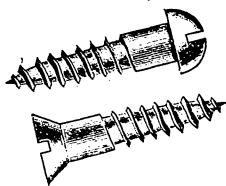
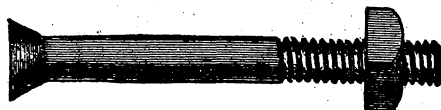
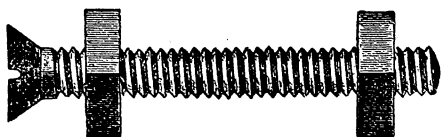
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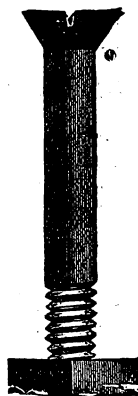
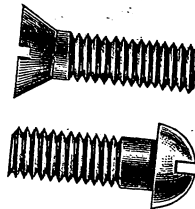
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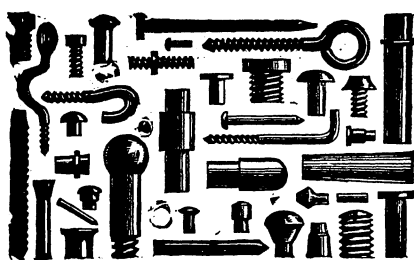
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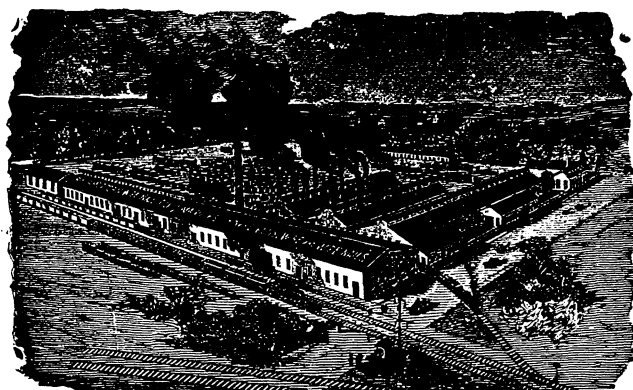


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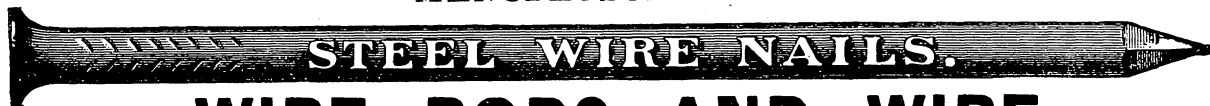
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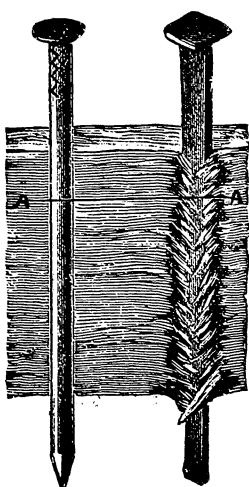
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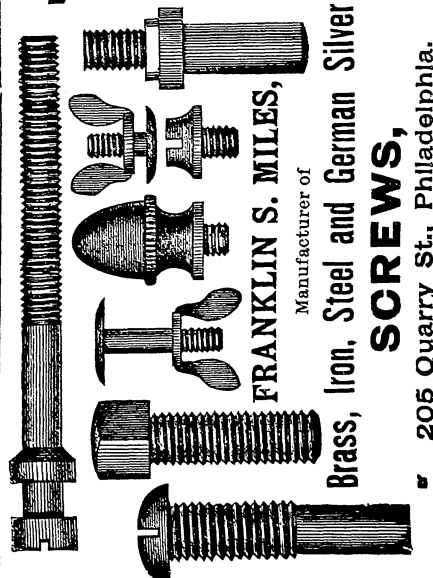
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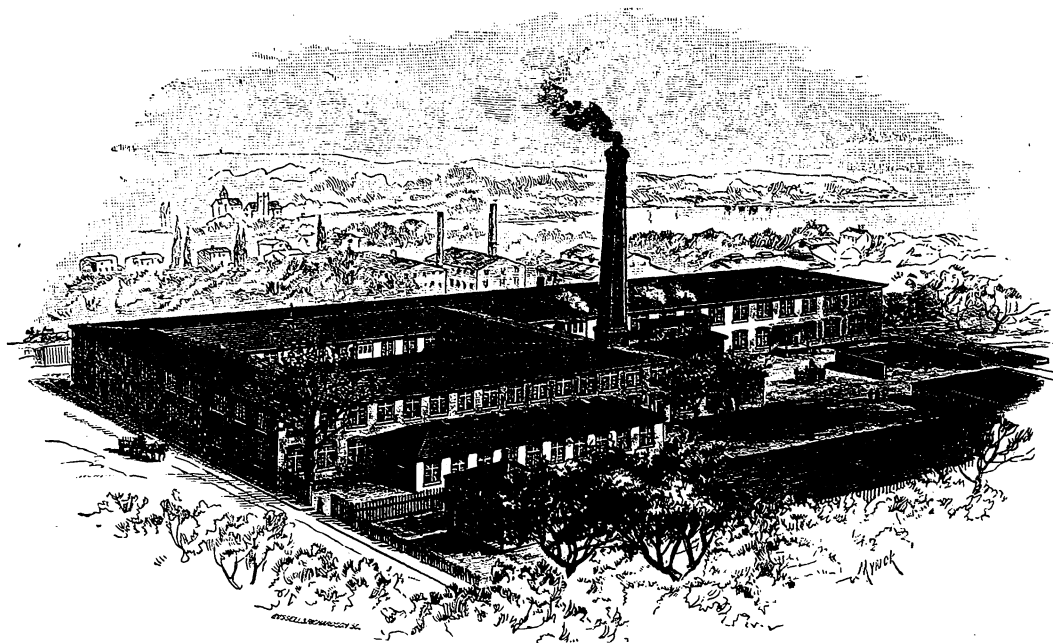
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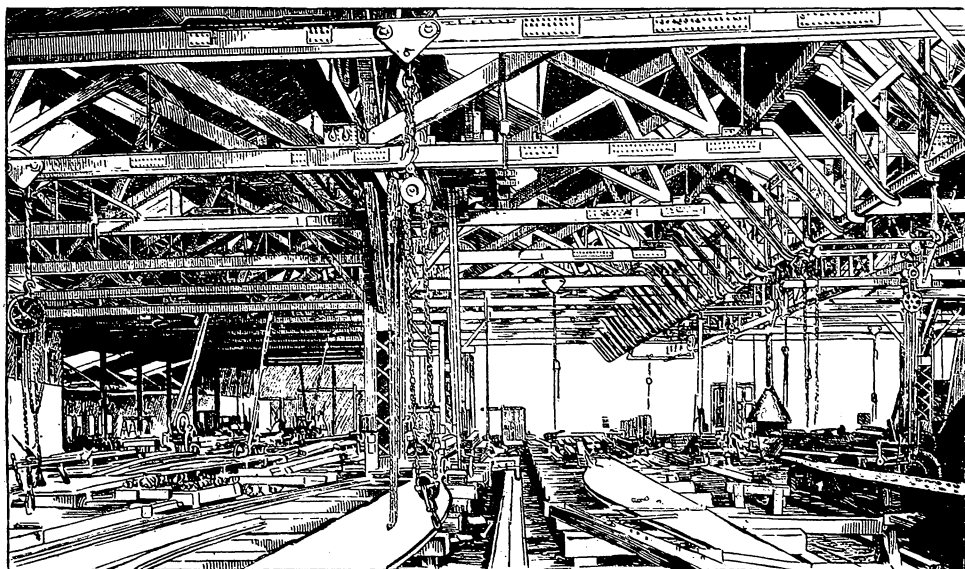
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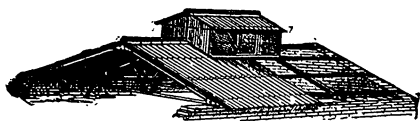
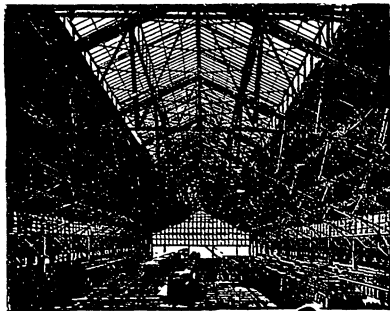
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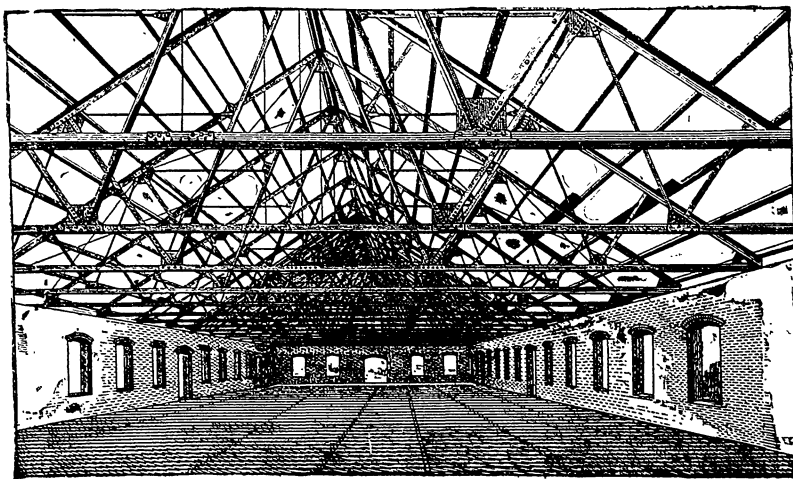
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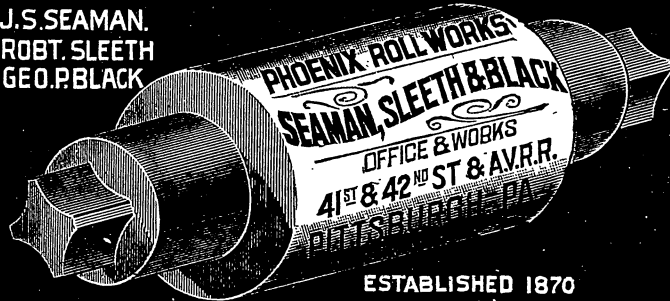
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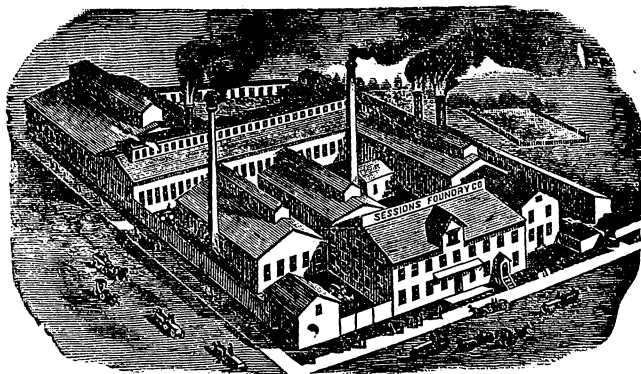
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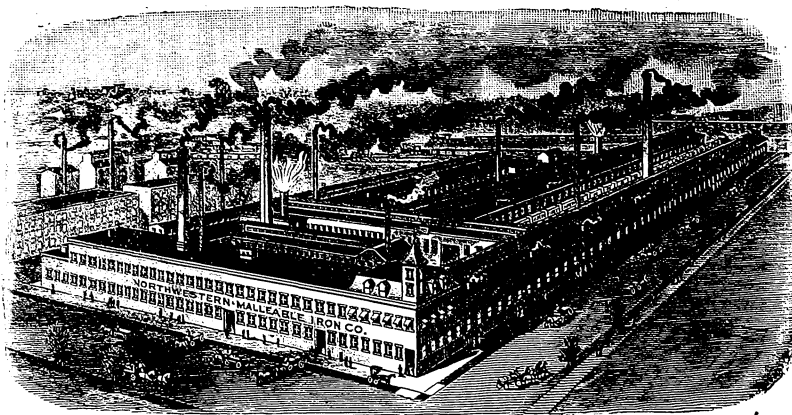
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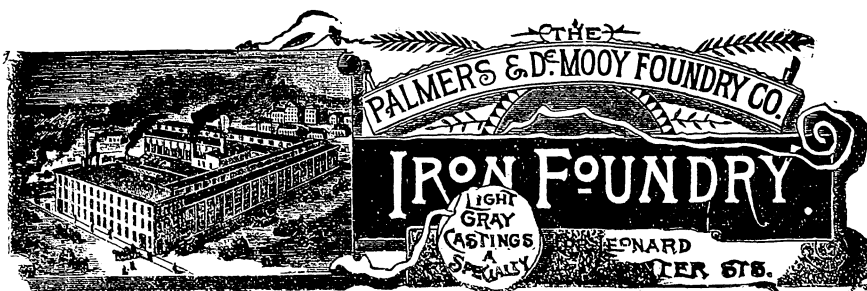
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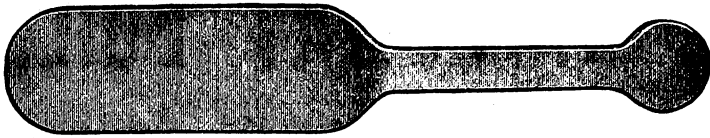
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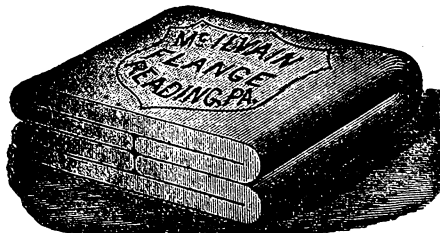
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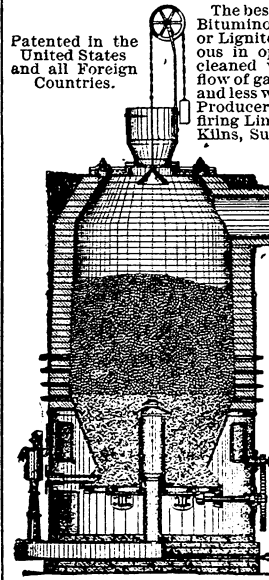
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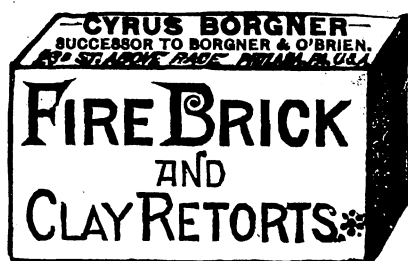
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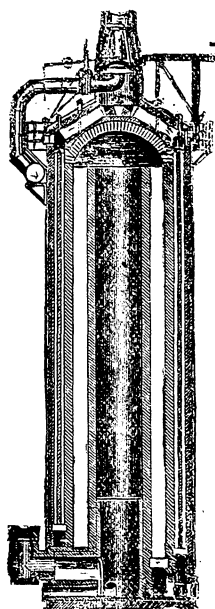
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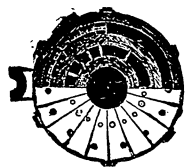
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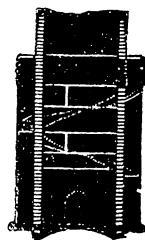
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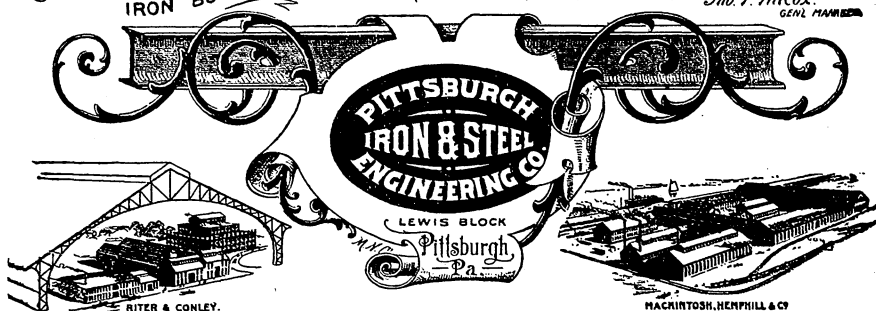
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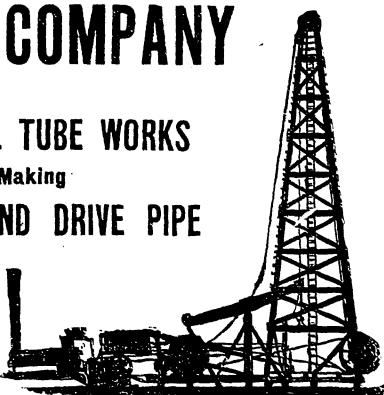
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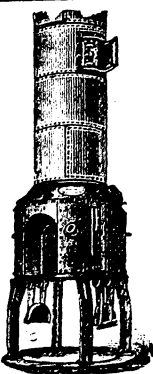
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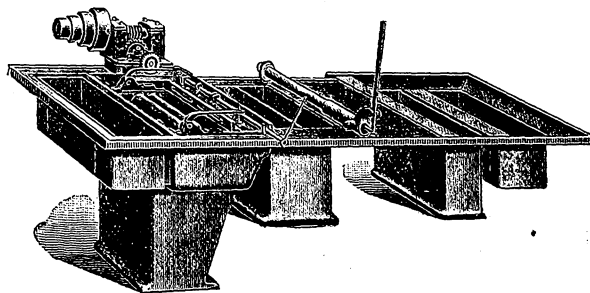
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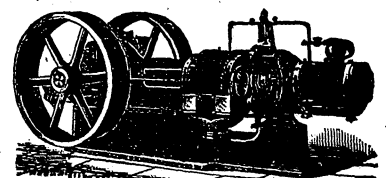
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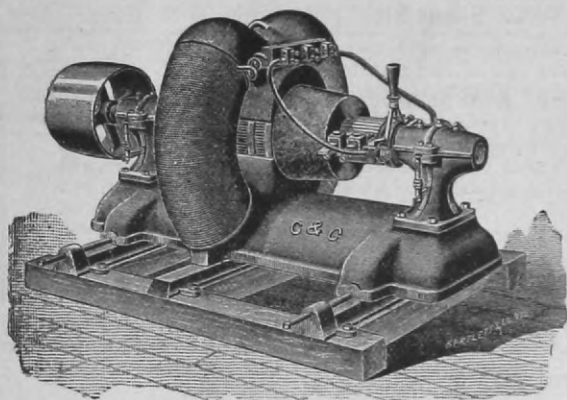
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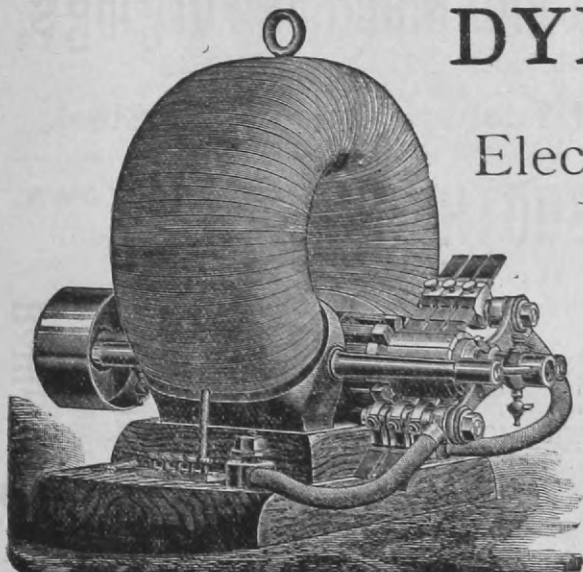
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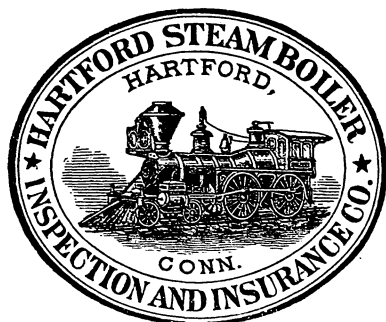
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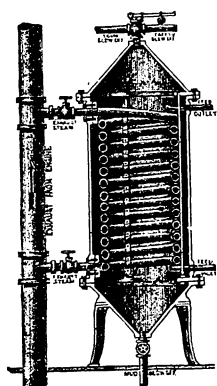


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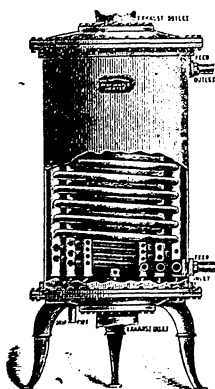
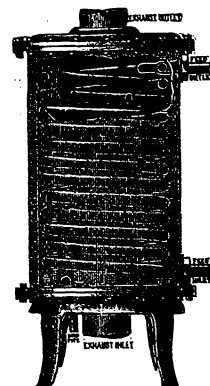
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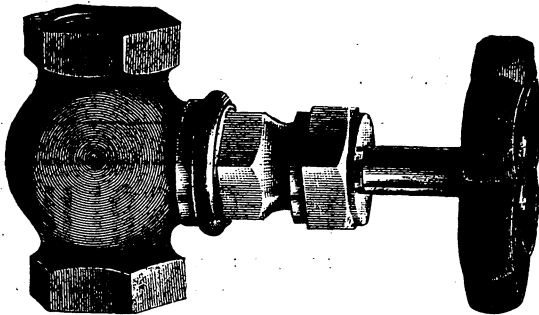
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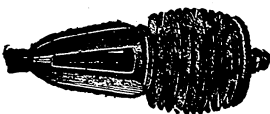
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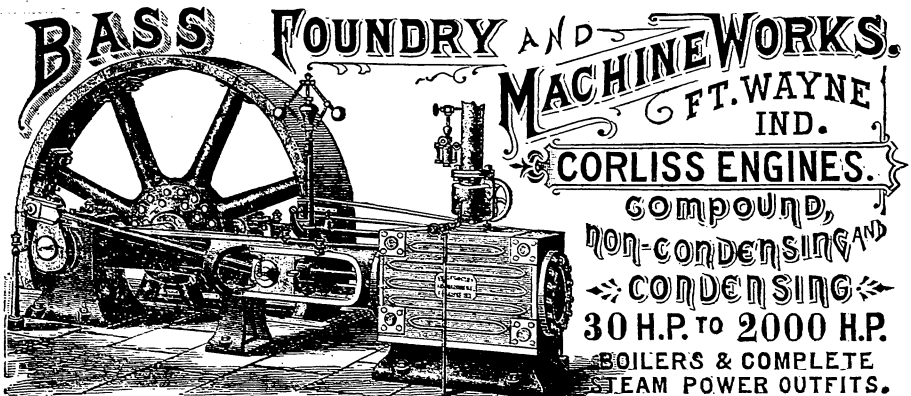
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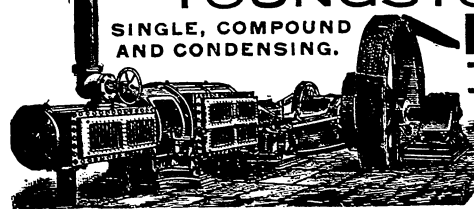
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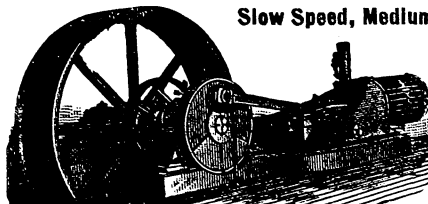
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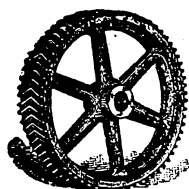
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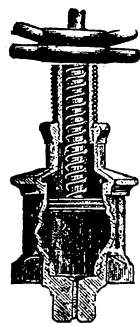
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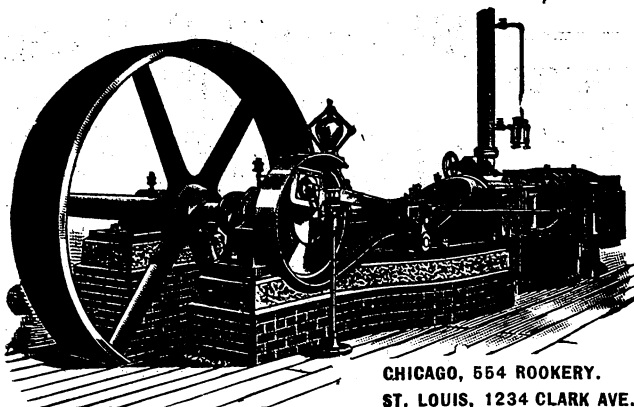
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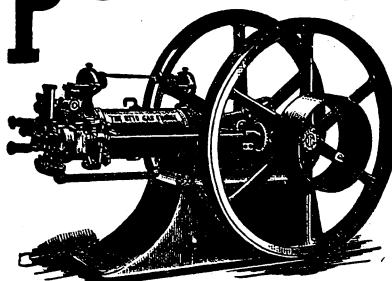
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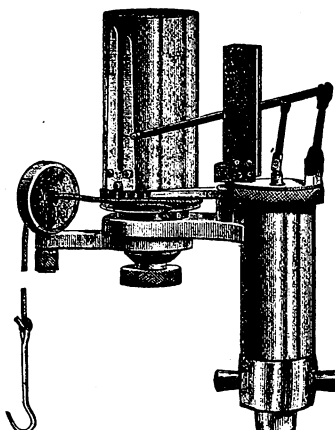
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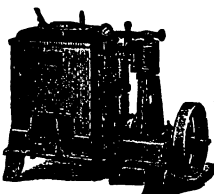
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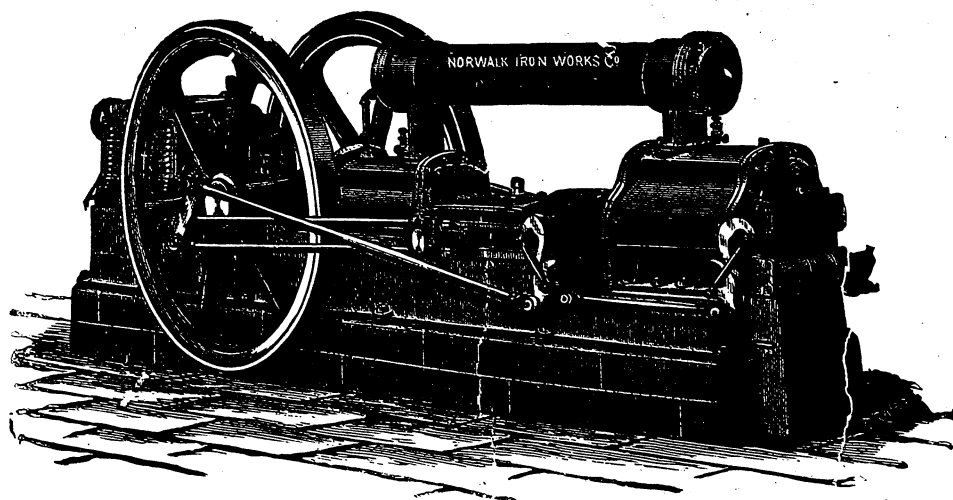
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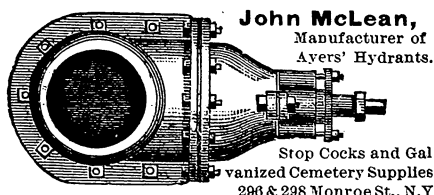
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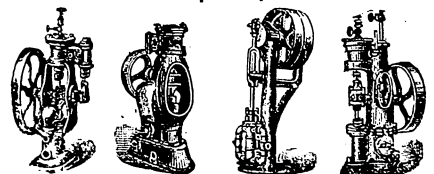
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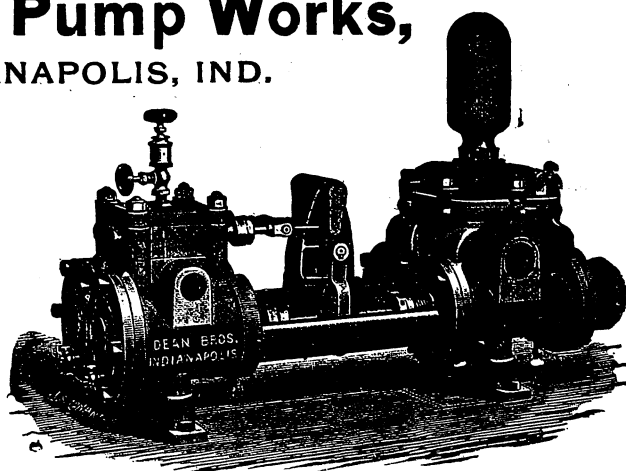
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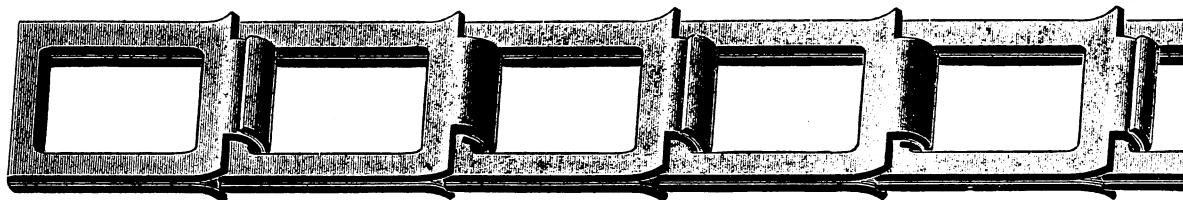
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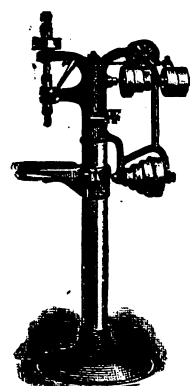
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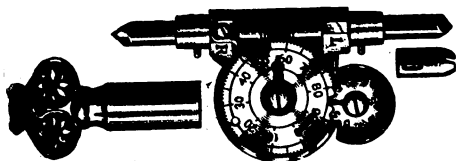
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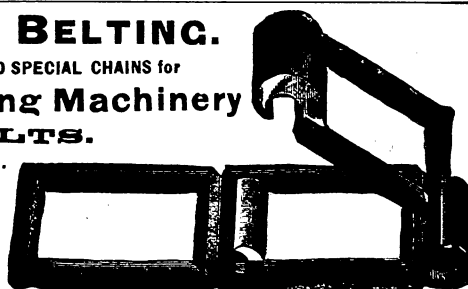
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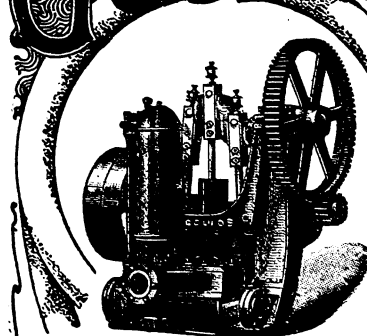
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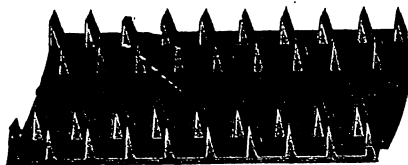
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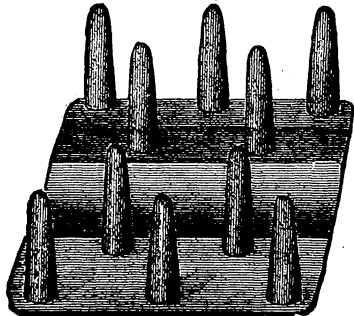
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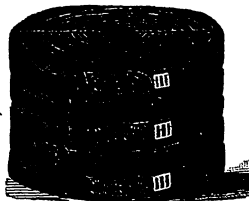
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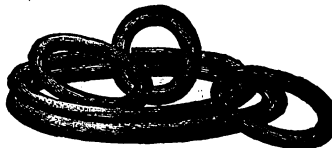
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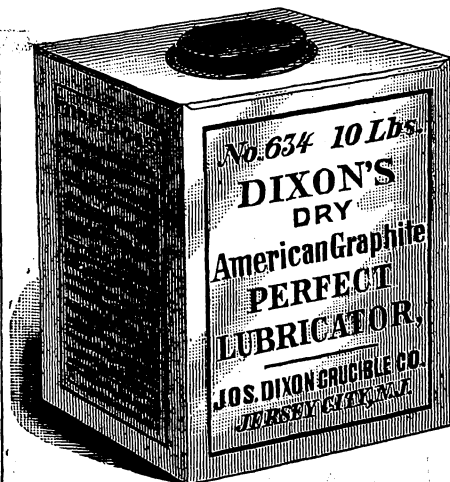
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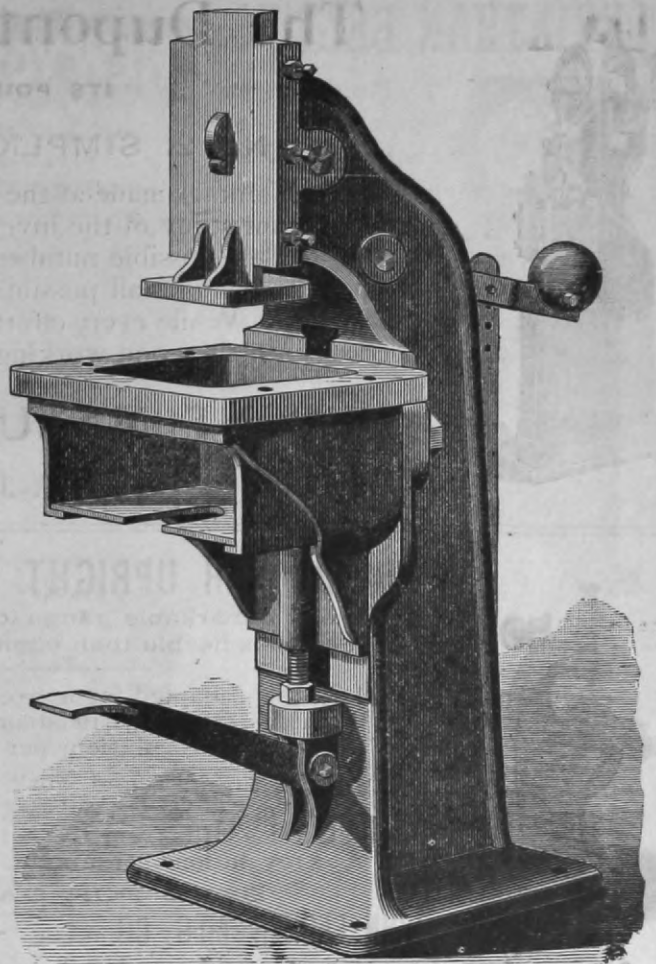
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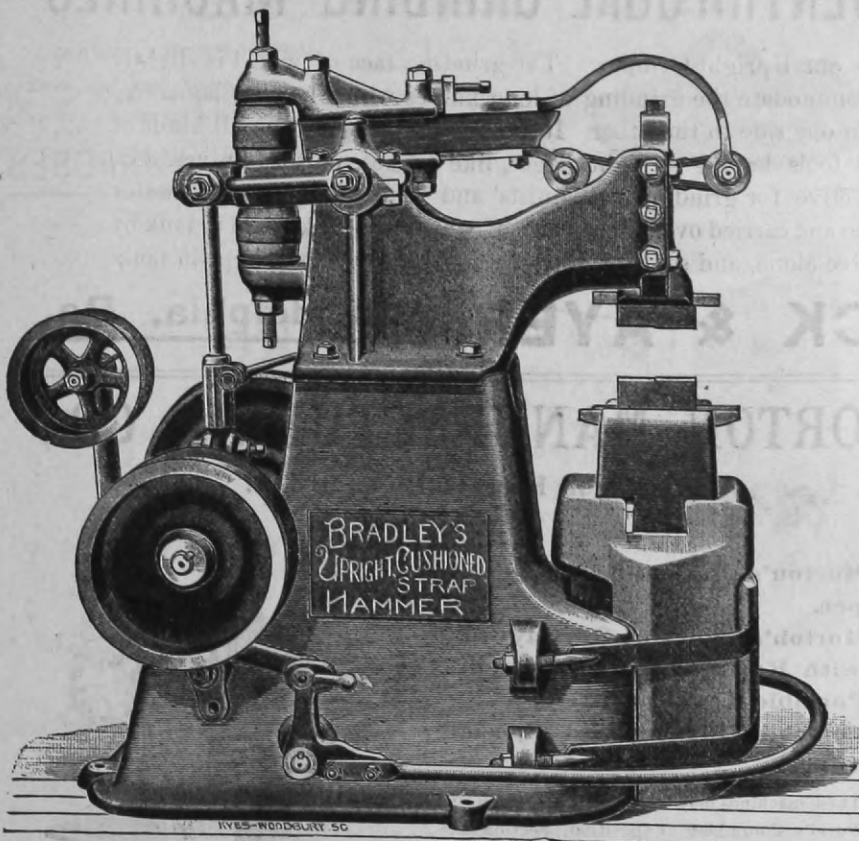
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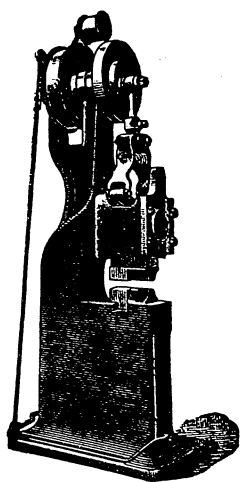
The Dupont Power Hammer.

ITS POINTS OF SUPERIORITY.

No. 2. SIMPLICITY OF CONSTRUCTION.

No Hammer made at the present time has less parts than this one. The constant study of the inventor and manufacturers has been to reduce it to the smallest possible number. The solid head of frame in which the crank-shaft runs precludes all possibility of cap bolts getting loose or shaft getting out of line. While every effort has been made to have few parts, nothing necessary for the good working of the Hammer has been omitted.

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THE BECKER UPRIGHT UNIVERSAL MILLERS

Have a remarkable range of utility and are more indispensable than common horizontal millers.

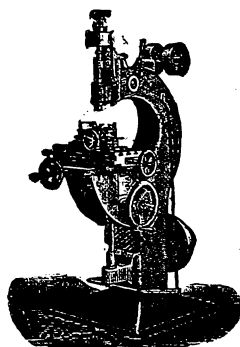
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No. 3, for all round work, such as *Face Milling, Milling Dovetail Slides, Key Seating, Splining, Boring* and many other purposes. Carries mills from 1-8 in. to 4 in. diam. Speeds from 40 to 2000 revolutions per minute.

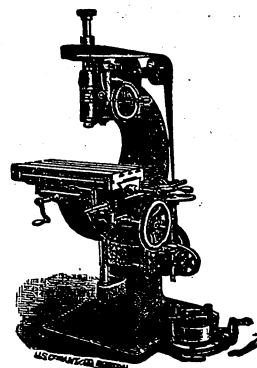
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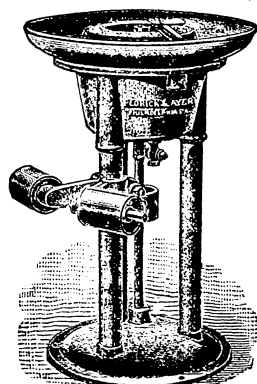


NO. 3.

PATENT CENTRIFUGAL GRINDING MACHINES

This cut shows our Upright Grinder. The grinding face of wheel is slightly beveled to accommodate the grinding of long knives which have to lay across the wheel from one side to the other. It is designed for grinding all kinds of wood-working tools having straight edges, like planes, chisels, knives, etc., and is also effective for grinding machinists' and kindred tools. The water is brought on to and carried over the surface of wheel and back again to tank by centrifugal force alone, and so, continuously, as long as water is kept in tank.

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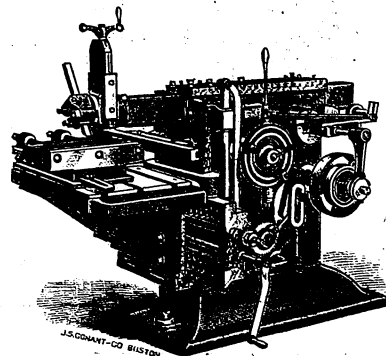
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Portable Planers and Special Machinery.

These machines may be seen in operation at the World's Columbian Exposition, Section 23, Column K45, Machinery Hall annex. Write for description and prices. Mention this paper.



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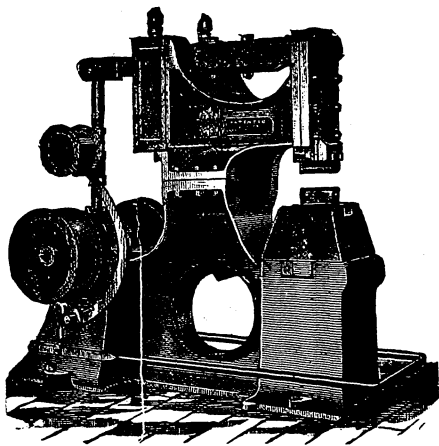
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Founders & Machinists.
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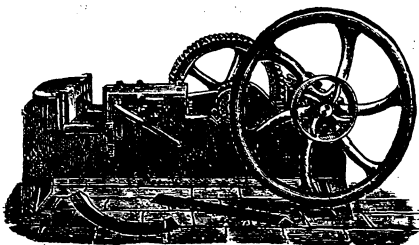
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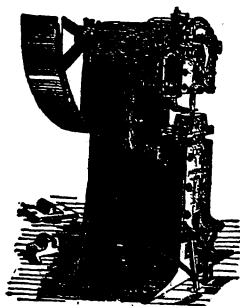
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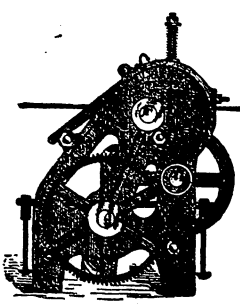
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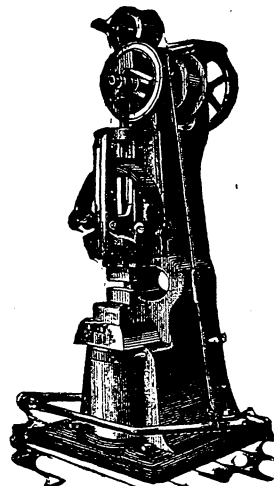
Patentee and Manufacturer,

530 W. 28th St., New York.

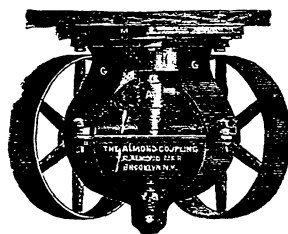
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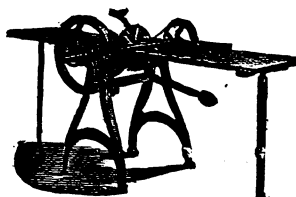
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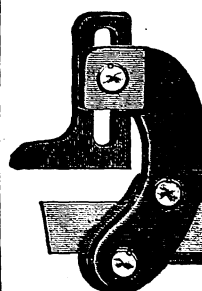
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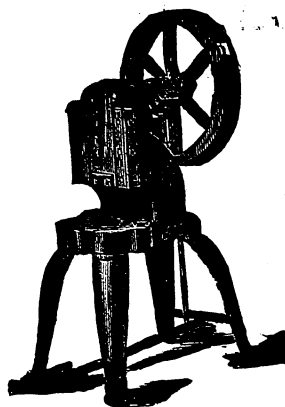
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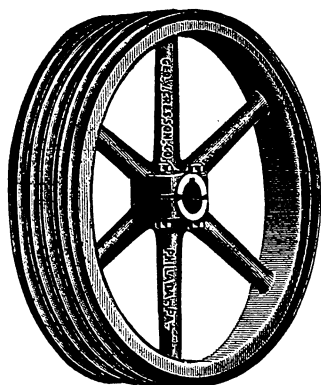
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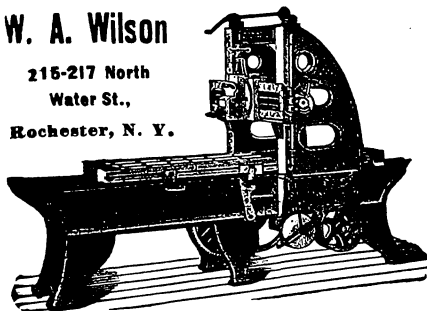


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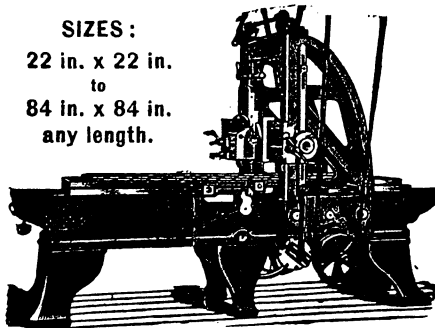
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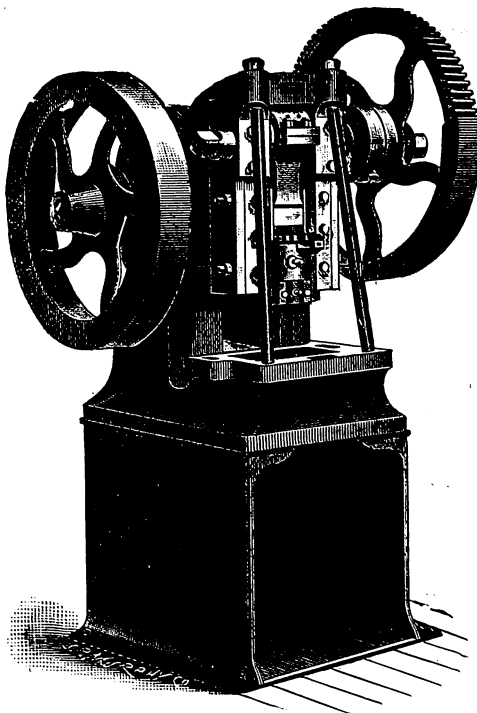
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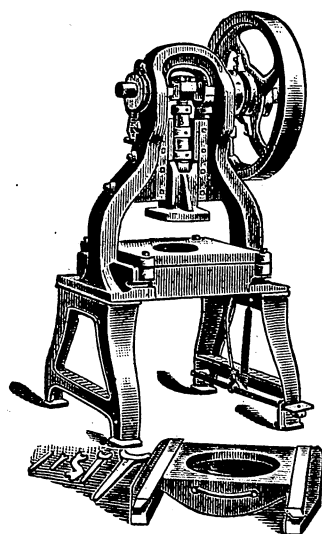
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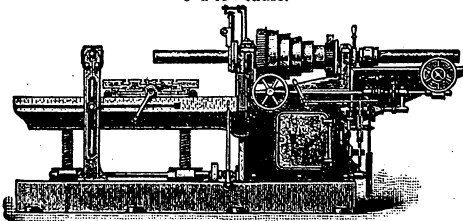
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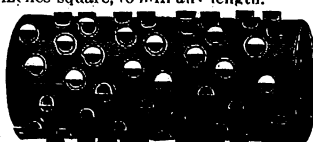


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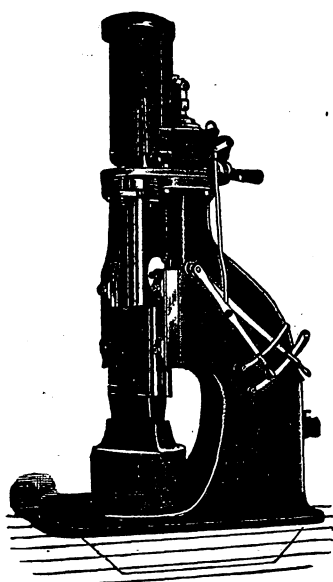
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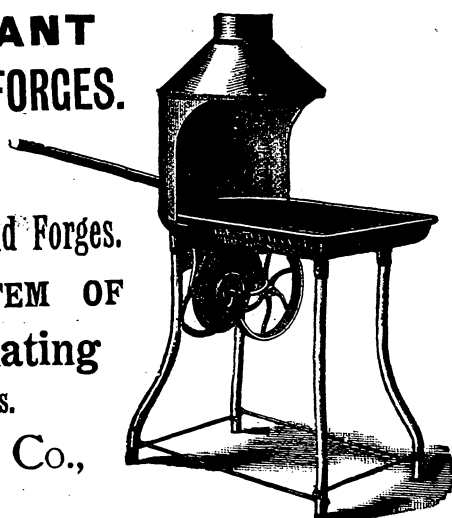
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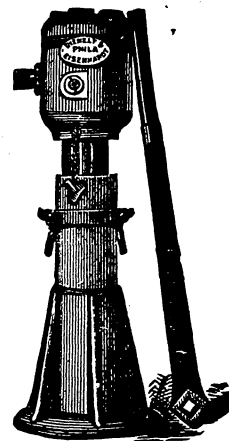
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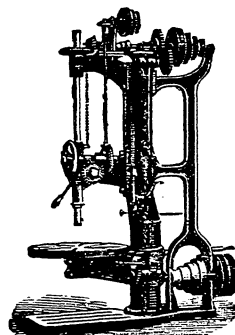
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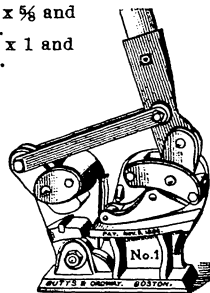
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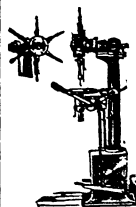
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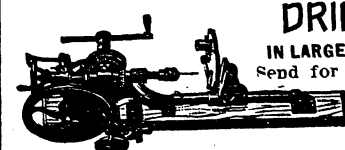
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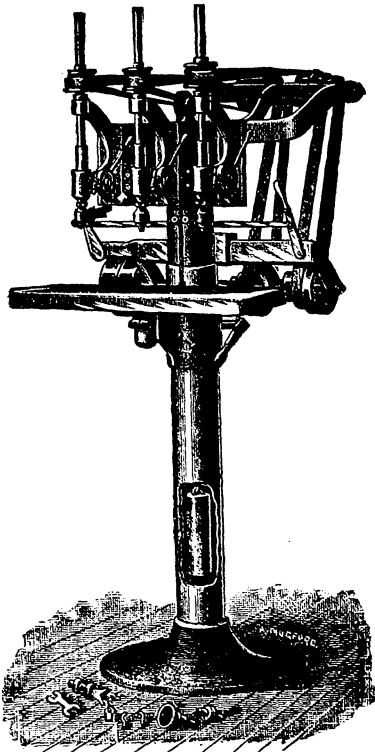
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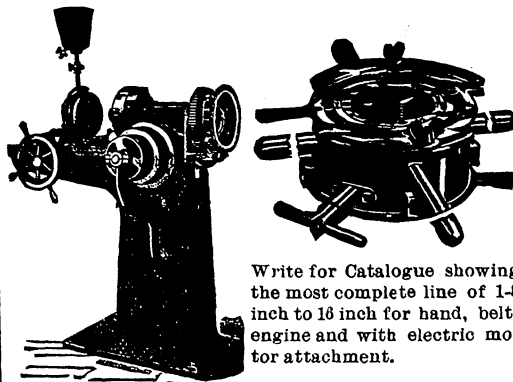
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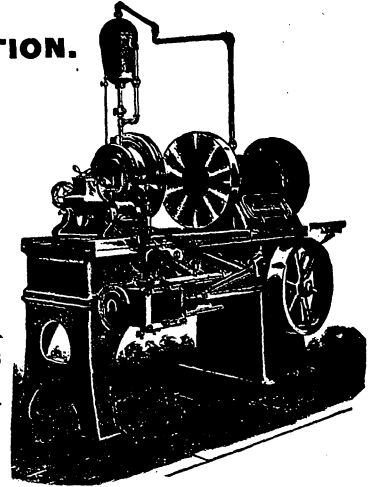
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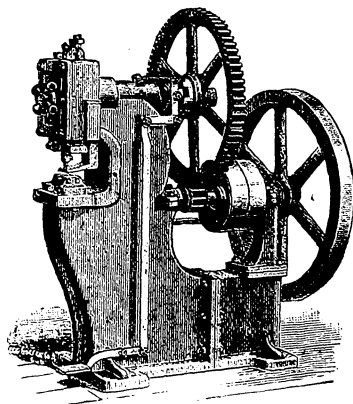


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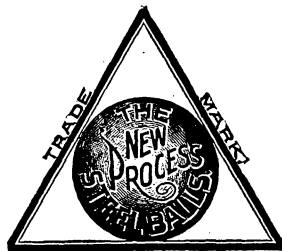
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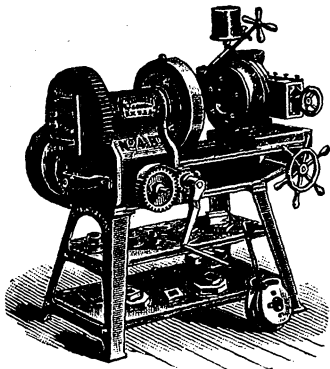


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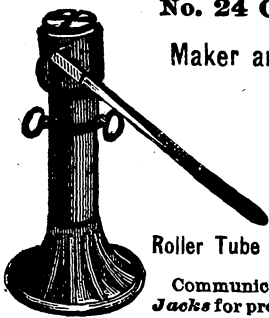
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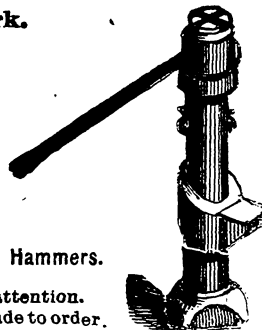
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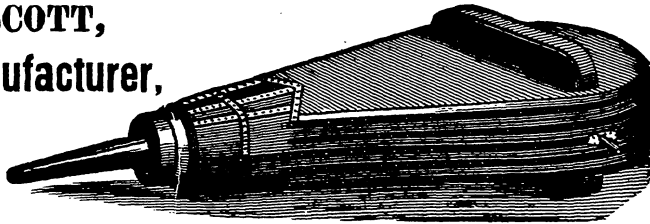
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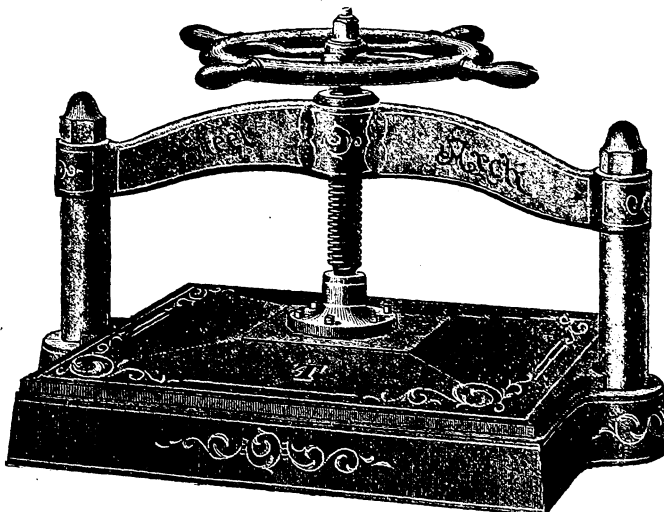
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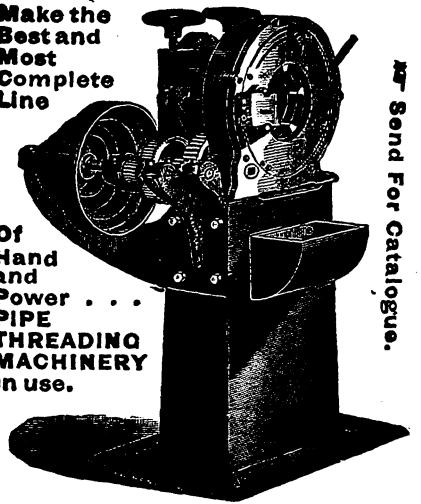
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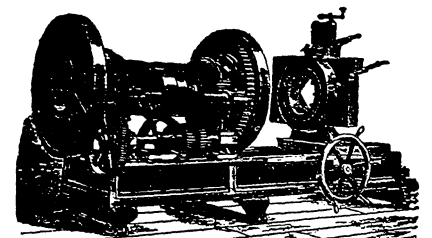
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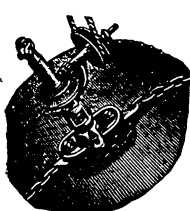
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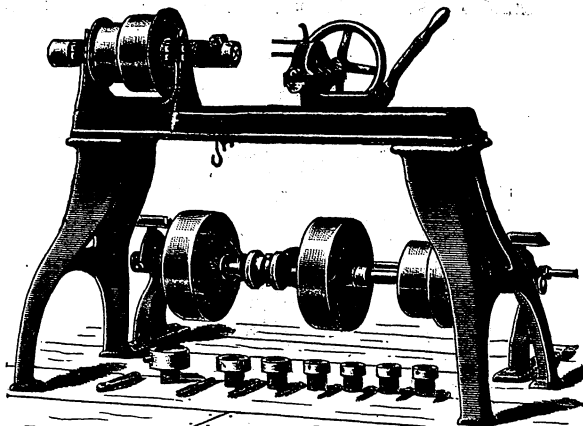
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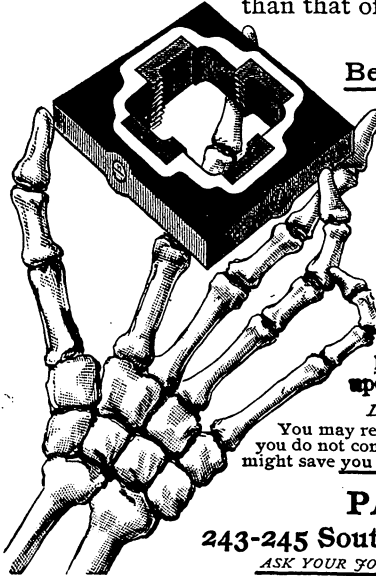


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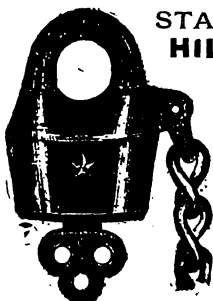
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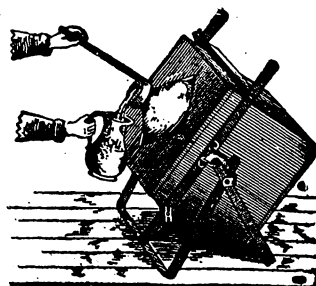
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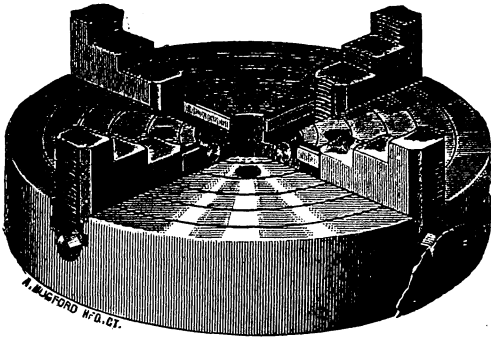
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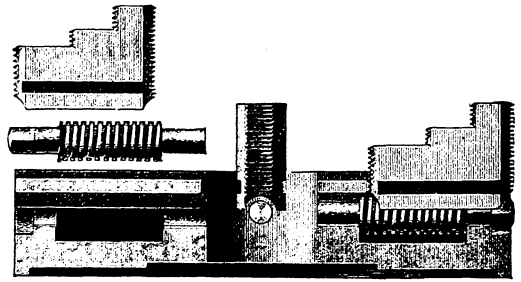
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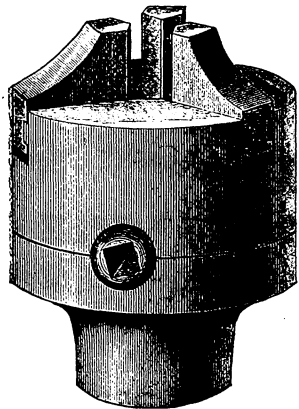
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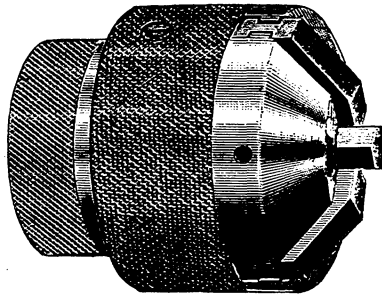
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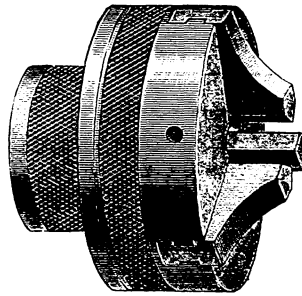
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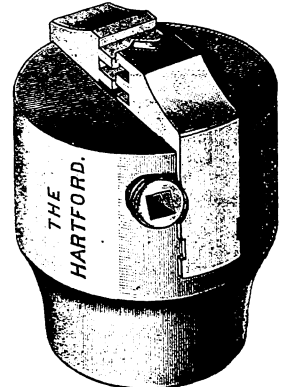
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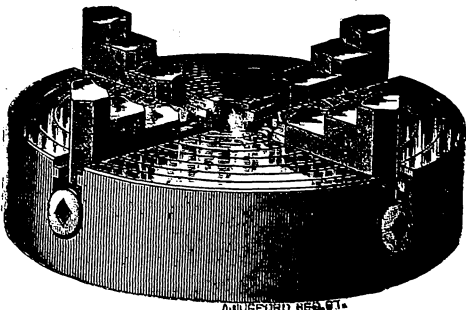


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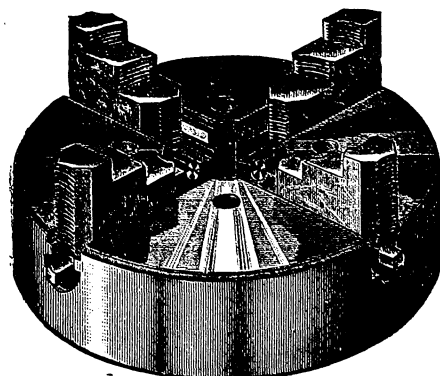


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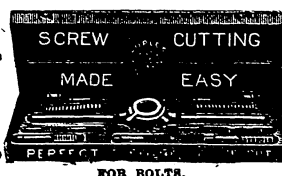


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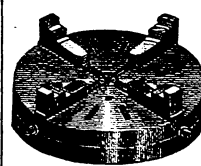
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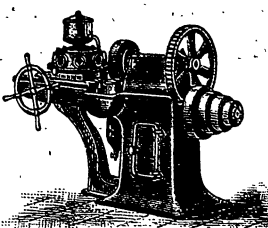
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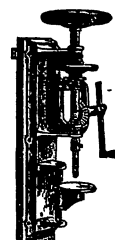
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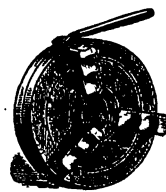
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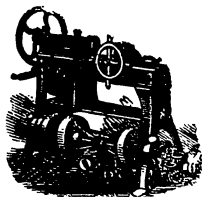


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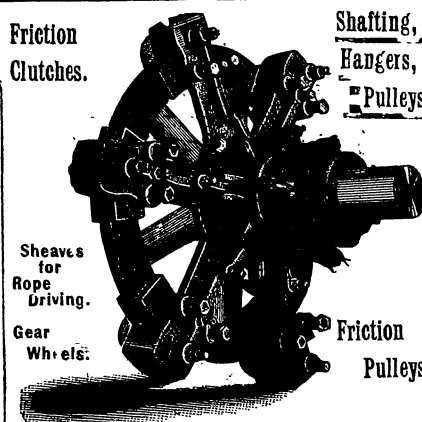
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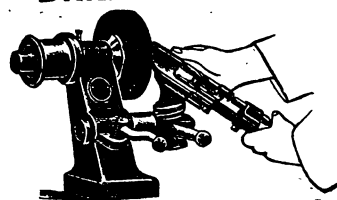


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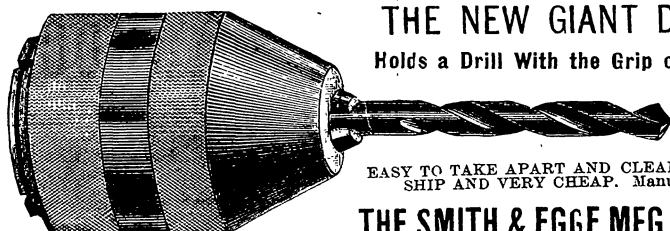


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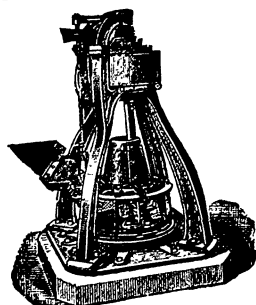
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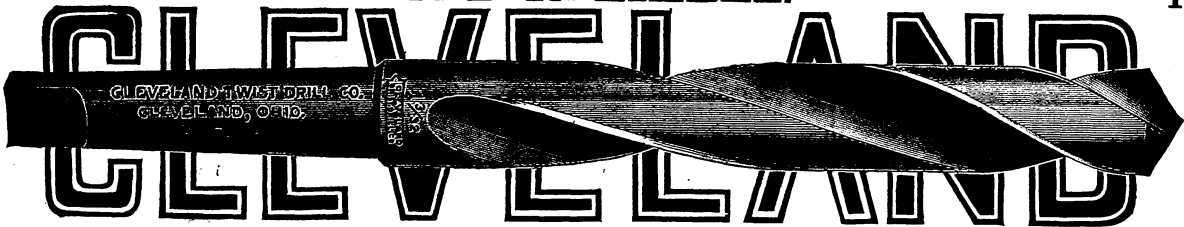
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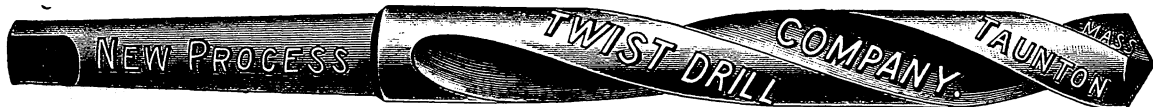
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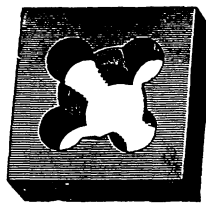
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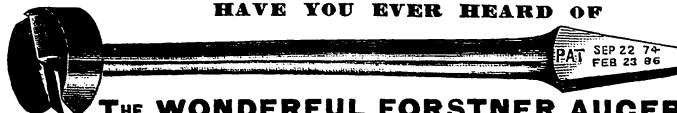
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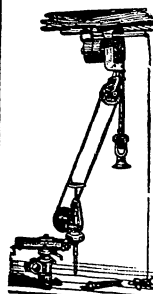
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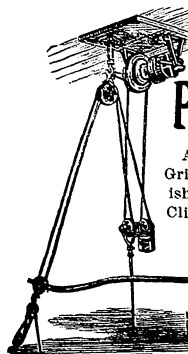
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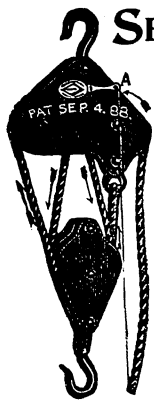
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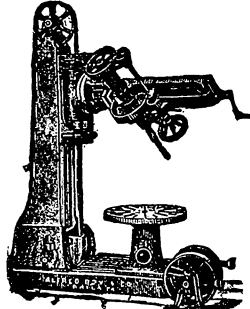
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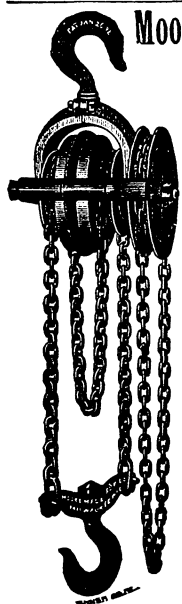
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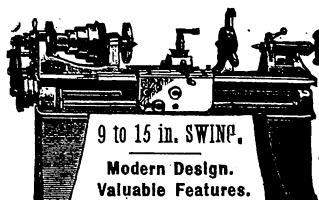
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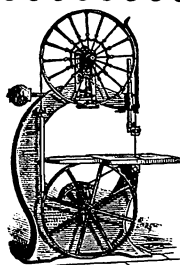
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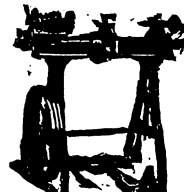
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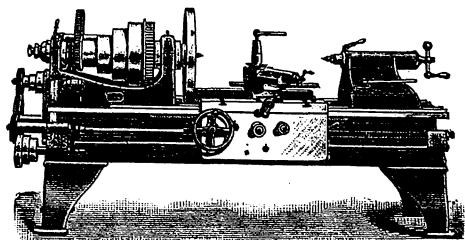
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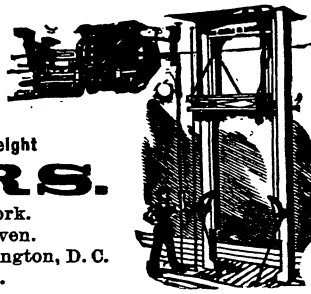
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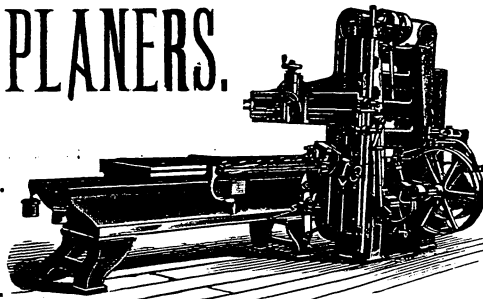
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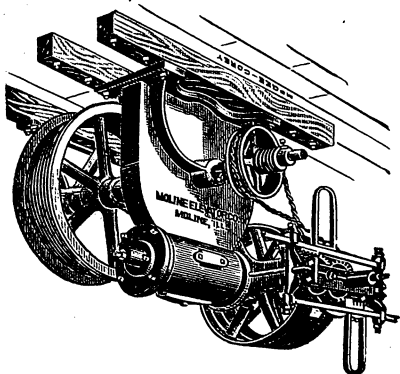
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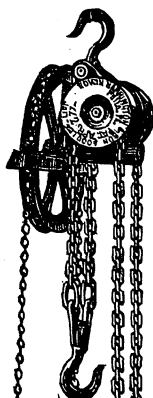
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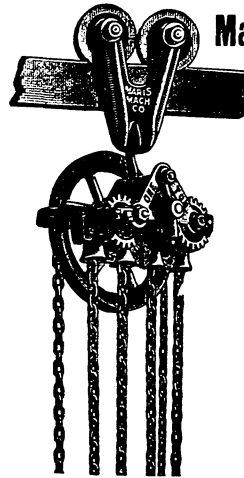
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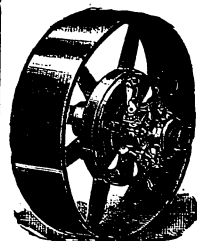
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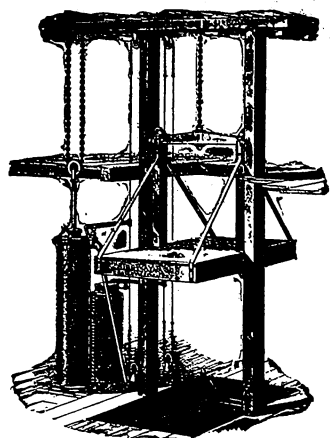
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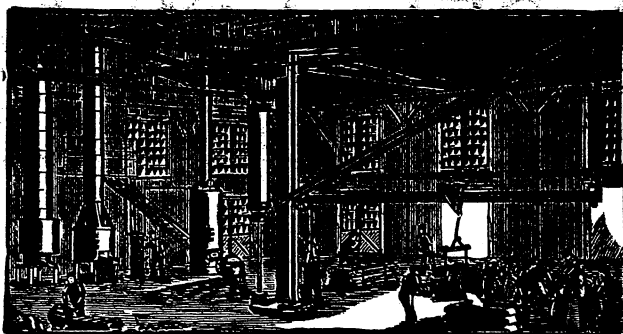
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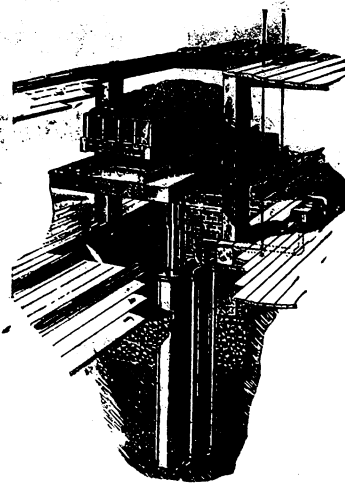
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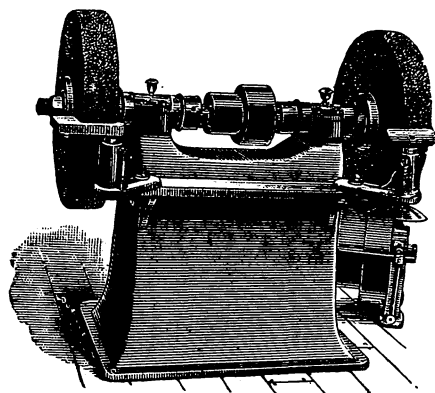
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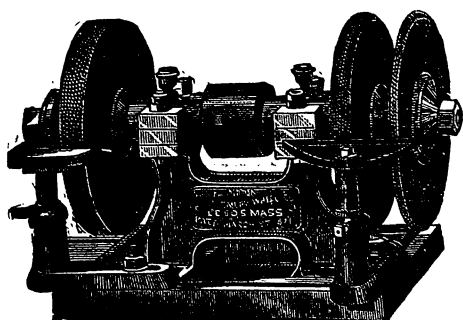
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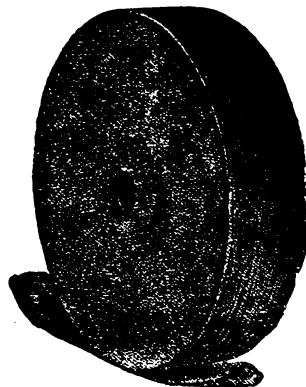
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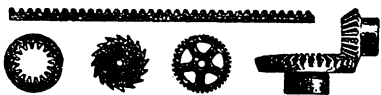
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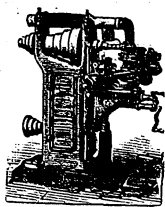
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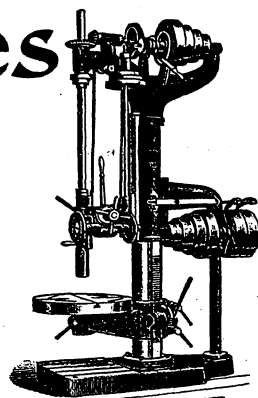
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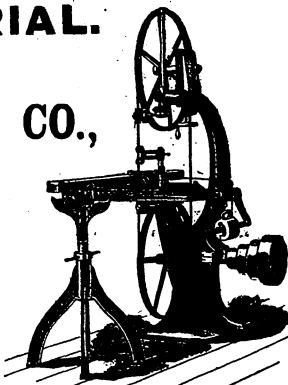
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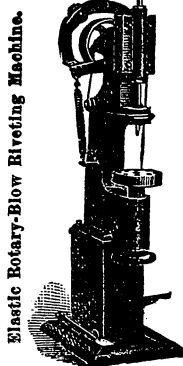
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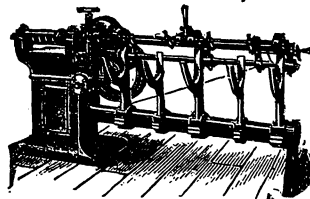
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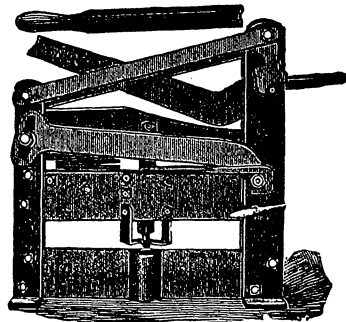
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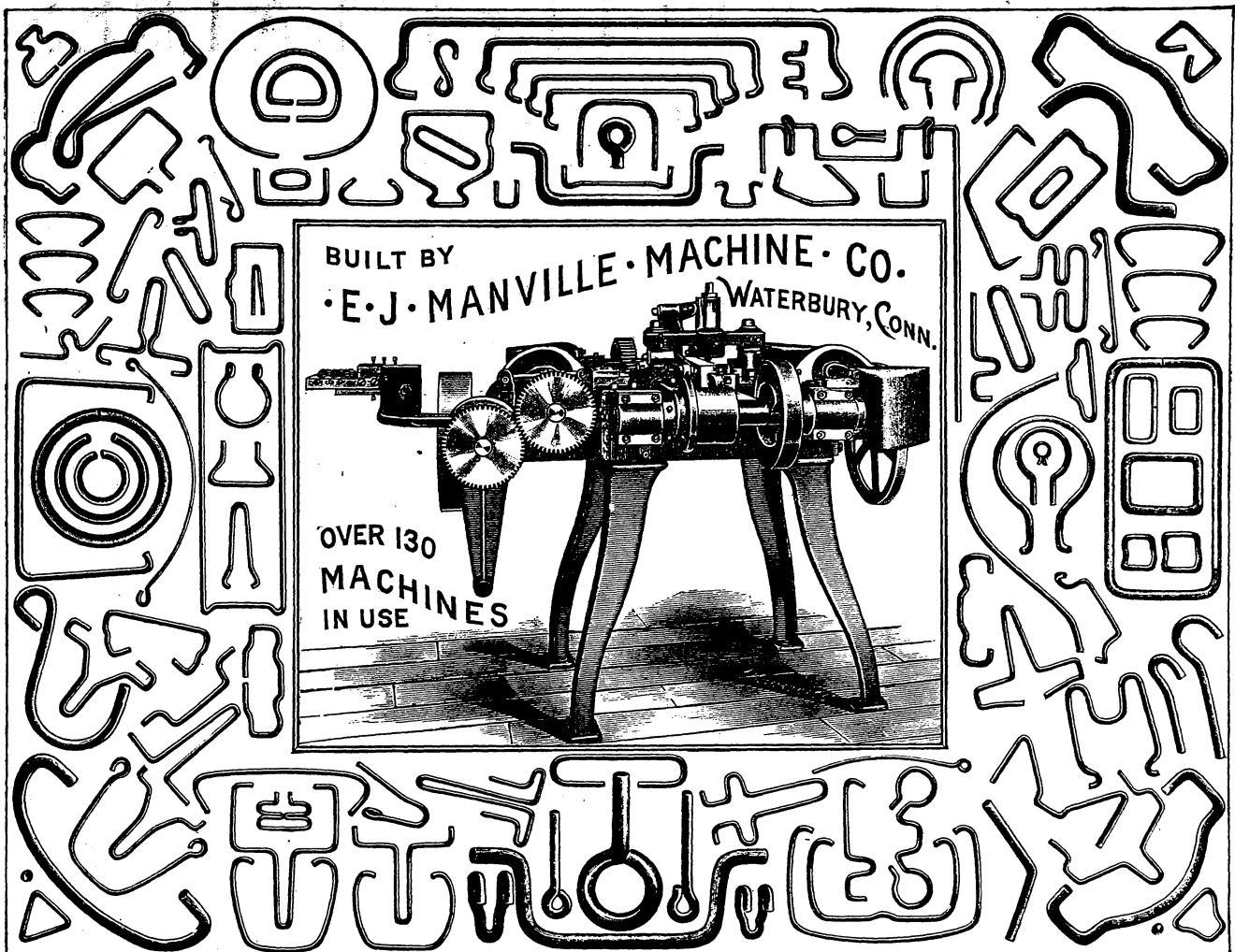
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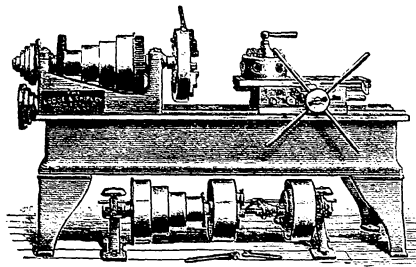
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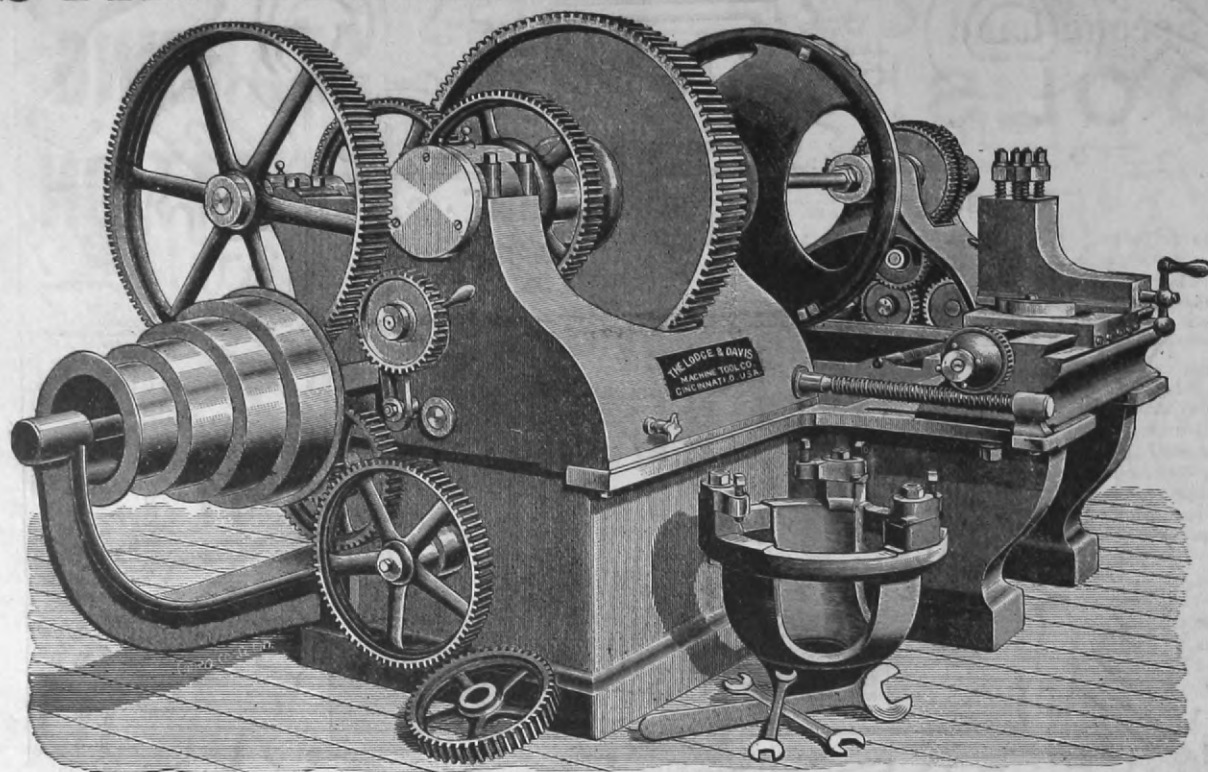
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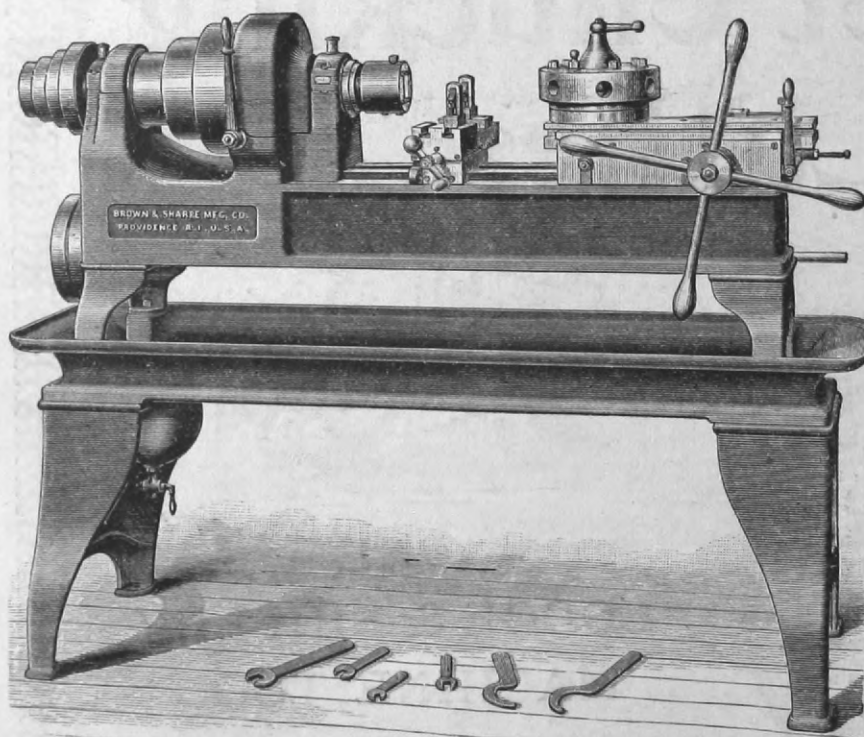
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Pat. Bolt Cutter, 1 1/2 in., for cutting accurate threads.
Bliss style Punch Press.
Long & Allstatter style Punch and Shears.
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Successor to E. P. Bullard's New York
Machinery Warerooms.**

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Second-hand Machinery. Good Condition.

1 set of Cement Boiler Rolls, 10 ft. 7 in. wide.
1 2500-lb. Double Frame Steam Hammer. Frederick Miles.
1 600-lb. Single Frame Steam Hammer. Frederick Miles.
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2 Cement Engine Lathes, 18 in. x 11 ft.
1 Niles Turret Lathe, 13 in. x 5 ft.
1 Pratt & Whitney Planer, 16 in. x 16 in. x 3 ft.
1 40-in. Schumacher Drill Press, B. G. & P. F.
1 28-in. Schumacher Drill Presses, B. G. & P. F.
1 24-in. Cement Drill Press, B. G. & P. F.
1 Power Punch; capacity, 1/2-in. hole in 1/4-in. iron. Punch to the center 12-in. sheet. Parker, Snol & Co., Fowler patent.
1 20 in. x 48 in. People's Works Horizontal Engine.
6, 8, 10, 15, 25 and 40 H.-P. Hoisting Engines.
1 Davidson Steam Pump, 12 in. x 8 in. x 14 in.

**L. F. SEYFERT'S SONS,
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METAL WORKING MACHINERY.

**All kinds.
NEW AND SECOND HAND.**

600 Machine Tools in Stock.

**Send for lists of Second-hand Machin-
ery and Secure Bargains.**

PRENTISS TOOL & SUPPLY CO.,

**115 Liberty Street, NEW YORK.
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PLANER, 28 in. x 26 in. x 8 ft., table. Good order \$350.00
30 in. x 30 in. x 6 ft., with chuck. Re-
built. 275.00
24-in. Heavy Shifting Belt SHAPER. New 300.00
LATHE, 18 in. x 10 ft., with chuck. Good order. 160.00
40-in. Heavy DRILL PRESS. Good as new. 335.00
26-in. " " Plain 85.00
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FORG'D DROP, 100-lb. Hammer, New Design. 160.00
WIRE STRAIGHTENER and Cutter, Semi-Aut. 60.00
BOLT CUTTER, New Head and Dies 3/8 to 1 1/2 in. 175.00
7 x 9 ENGINE. Splendid order. 85.00
POWER PUNCH PRESSES. \$75.00 and upward.
AMER. TOOL WORKS., Cleveland, O.

SECOND-HAND MACHINISTS' TOOLS.

1 Planer, planes 15 ft. 42 in. x 42 in.
1 Planer, planes 6 ft. 32 in. x 26 in.
1 Planer, planes 5 ft. 24 in. x 24 in., Whitcomb.
1 Planer, planes 5 ft. 24 in. x 24 in.
1 Planer, planes 5 ft. 22 in. x 22 in., old style, cheap.
1 Planer, planes 4 ft. 24 in. x 24 in.
1 Crank Planer, 2 ft. 18 in. x 12 in. A1.
1 Engine Lathe, 18 ft. bed, 32 in. swing, for Boring and Turning.
1 13 ft. 24 in. Lathe.
1 12 ft. 22 in. Lathe. Good order.
1 11 ft. 18 in. Lathe. Good order.
3 8 ft. 14 in. Blaisdell Lathes.
2 6 ft. 15 in. Wood & Light Lathes.
1 6 ft. 18 in. Lathe.
1 Pratt & Whitney Cushioned Hammer.
1 36-in. Back Geared New Haven Drill.
1 Brown & Sharpe Universal Grinding Machine. A1.
2 20-in. Wheel and Lever Feed Drills.
1 Small "Eureka" Steam Hammer.
And various other tools.

**NEW YORK MACHINERY DEPOT,
Bridge Store No. 16, on Frankfort St., New York.**

FOR SALE.

1 each Garvin No. 2 & No. 4 Milling Machines, 2d hand.
1 22 in. x 11 ft. 6 in. Blaisdell Engine Lathe, " "
1 17 in. x 8 ft. McAlahon " "
1 28 in. x 8 ft. New Haven " "
1 26-in. Post Drill, second hand.
1 each 22 x 8, 10, 12 Engine Lathes, new.
1 each 52-in. and 82 in. Radial Drills, new.
1 each 20 in. "Lever" and "Wheel and Lever" Drills,
1 Baker Bros. Universal Saw Bench, new. [new.]

**THE LODGE & SHIPLEY MACHINE TOOL CO.,
107-113 Culvert St., Cincinnati, Ohio.**

FOR SALE.

Fitchburg Machine Co. Vertical Automatic Engine, cylinder 14 in. x 14 in. A large variety of second-hand Steam Boiler Feed and Tank Pumps.
**F. MCSWEGAN & SONS,
Dover St. and Franklin Square, N. Y..**

A STANDING INVITATION.

"One touch of nature makes the whole world kin,"

Even to the 99th degree,

And we invite **YOU ALL**, when pur-
chasing tickets to the

COLUMBIAN EXHIBITION,

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VIA

PHILADELPHIA,

And when you have visited the
CRADLE OF LIBERTY

AND THE

GRAVE OF FRANKLIN,

both of which are to be seen in the
QUAKER CITY,

Come round to our office, within three
blocks of the above attractions, and let us
have a friendly talk about machinery.

We are **Manufacturers' Special Agents**,
and can save you money on any ma-
chinery purchase

**For Motive Power,
For Iron Working,
or for Wood Working,**

And verily, when we have reasoned with
you, and you have returned to your sev-
eral homes, you will say each unto his
wife, "My trip hath not been unprofitable."

Pennsylvania Machine Co., Ltd.,

29 and 31 N. SEVENTH ST.,

PHILADELPHIA, PA.

FOR SALE—SECOND-HAND.

3 Upright Corliss Boilers, 150 H.-P. each.
1 Locomotive Fire Box Boiler, 50 H.-P.
1 16 x 36 in. Slide Valve Engine.
1 14 x 42 Greene Engine.
1 16 x 42 Babcock & Wilcox.

Large assortment of Knowles, Blake and
Worthington Steam Pumps. Write for prices
and full description to

**D. B. CRICKSHANK,
Providence, R. I.**

I offer 3 20 in. x 24 in. Improved Straight-line
**Ingersoll-Sergeant Air Com-
pressors,**

built in 1890, and used only seven months at St.
Clair Tunnel. Ready for delivery and in first-
class condition.

1 24 in. x 60 in. Left-hand **Harris-Corliss
Engine.** May be seen running

**F. W. IREDELL,
Havemeyer Building, 26 Cortlandt St.,
NEW YORK.**

MACHINERY, NEW AND SECOND-HAND, FOR SALE. LATHES.

80 in. x 18½ ft., Geared Face Plate.
60 in. x 46 ft., Double Lathe, complete.
52 in. x 36 ft., Rod Feed only; one end has Horizontal Machine.
48 in. x 27 ft., cheap.
36 in. x 18 ft., Geared Face Plate.
36 in. x 16 ft.
38 in. x 27 ft.
30 in. x 28 ft., Shafting Lathe, Pond.
28 in. x 22 ft., cheap
24 in. x 10 ft.
10 in. x 4 ft., A1.

PLANERS, SHAPERS, SLOTTERS.

3 ft. x 15 in. 7 ft. x 28 in. 9, 12, 15, 16 in. stroke
4 ft. x 20 in. 8 ft. x 30 in. Shapers.
5 ft. x 22 in. 10 ft. x 31 in. 15, 20, 26 in. stroke
6 ft. x 24 in. 12 ft. x 36 in. Shapers.
8 ft. x 24 in. 16 ft. x 42 in. 18, 13 in. stroke Slot-
5 ft. x 26 in. 22 ft. x 62 in. ters.
5 ft. x 28 in. 24½ ft. x 54 in.

Lincoln Millers Gang Drills, Screw Machines.
Steam Hammers, 100, 160, 1000 and 3000 lbs.
Drill Presses, 20, 24, 26, 28, 30, 44 in., Upright.
Bolt Cutters, 1¼, 1½ in.
Flanging Machine, O'Brien Pat., for Circular Boiler Heads.
Gear Molding Machine, Scott's Pat., 3 different sizes.
Bliss Punching Press, No. 75.
Corliss Engines, 12 in. x 24 in., 14 in. x 36 in., and 16 in. x 42 in.
Brown Engine, 16 in. x 48 in. Whitehill, 11 in. x 18 in.
Vertical Engine, 13 in. x 16 in., N. Y. Safety Steam Power Co.
Send for latest list.

GEO. PLACE MACHINE CO.,
120 Broadway, New York.

FOR SALE.

One 16 in. x 24 in. Standard Gauge Locomotive.
One 15 in. x 20 in. Standard Gauge Locomotive.
Three 7 in. x 12 in.-36 in. Gauge Locomotives.
Fire Box Boilers from 15 to 100 horse-power in stock; Engines, Boilers, Shears, Hoisting Engines, Pile Drivers' and Contractors' Supplies.

THOMAS CARLIN'S SONS,
Allegheny, Pa.

4 BOILERS.

Four second-hand 75 H.-P. Double-Deck Boilers, with all fittings and fixtures. In first-class condition. Cheap.
Two 2-flue Boilers, 48 in. diam. x 32 ft. long, in prime condition. Cheap.
One 16 x 22 Side Crank Engine.
One 16 x 36 Side Crank Engine.
Full line of new and second-hand Boilers and Engines always on hand.
H. M. Sciple & Co., 3d and Arch Sts., Philadelphia, Pa.

Relaying Rails and Narrow-Gauge Equipment and large quantities of Light New Steel Tee Rails; For Sale Cheap.

100 tons of "I" Beams, new, 7 to 15 in. and 15 to 28 ft. long.
I am in the market at all times to buy or sell anything in the way of second-hand Equipment, Rails, and Scrap. In answering, kindly mention paper.

L. K. HIRSCH,
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FOR SALE.

40,000 pounds Standard Binding Twine.
4000 " Cotton Rope.
20,000 " Manila "

Will sell cheap.

L. K. HIRSCH,
549 Rookery, Chicago, Ill.

STEAM PUMPS FOR SALE.

One 6 in. x 4 in. x 6 in. Worthington Pump.
One 6 in. x 4 in. x 6 in. Smith Vaile Pump.
One 5 in. x 4 in. x 6 in. Deane Tank Pump.
One 6 x 3½ x 6 Knowles Pump, and
Hooker Pumps for every duty.

Address

HOOKE-COLVILLE STEAM PUMP CO.,
St. Louis, Mo

BARGAIN.

Niles Tool Works Planer.
To plane 84 in. x 84 in. x 16½ ft.

Two heads on cross rail. Modern heavy machine.

GEO. PLACE MACHINE CO.,
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FOR SALE.

Pair of Mine Hoisting Engines,
100 H.-P., double geared, very strongly built.

Locomotive Boilers,
all sizes, fitted to suit customers.

Full line of Engines and Pumps, guaranteed first class. It will pay you to see our stock before buying.

CHESTER BERTOLETTE & CO.,
Norristown, Pa.

FOR SALE. PUMPS, ENGINE & BLOWER.

1 Cameron Pump, No. 12 Special.
2 Guild & Garrison Pumps, No. 3.
2 Small Pumps.
1 8 in. x 12 in. Vertical Engine.
1 Dimpfel's Blower, 5 ft. x 20 in.

DAN'L W. RICHARDS & Co.,
86-92 Mangin St., New York.

FOR SALE.

2 Double Deck Boilers about 40 H.-P. each, cheap. Hoisting Engine. Cylinder Boilers for Stacks, 30, 40 and 42 in. diameter. Round and Square Iron Tanks. Book Binding Machinery. Smoke Stacks, light and heavy, all sizes. Large lot Cast and Wrought Scrap Iron on hand. Also Dealers in Metals.

BUSSENIUS & CUNLIFFE,
12th and Washington Ave., Philadelphia.

FOR SALE. CRANK and GEARED SHAPERS.

Write us for Bargains.

J. STEPTOE & CO., Cincinnati, O.

FOR SALE.

25 lb. section iron T Rails in good condition for relaying.

WM. H. PERRY & CO.,
Providence, R. I.

RECEIVER'S SALE.

FORT WAYNE, INDIANA, May 6, 1893.

The stock in trade and good will of the old established Jobbing Carriage and Hardware firm of Coombs & Co. is for sale; said stock consisting of new and well selected goods for the trade, in good condition. Favorable terms will be given to purchasers intending to continue the business, which is well known and may be made very profitable. Copy of the inventory just completed, and the stock, amounting to about \$90,000, will be shown to parties wishing to purchase upon application to the undersigned. S. C. LUMBARD, Receiver.

AGENCY WANTED.

A gentleman born and raised in Pittsburgh, of large business experience and personally acquainted with all the manufacturers in that city and vicinity, is about to open an office in Pittsburgh as **Manufacturers' Agent**, and would like to communicate with some manufacturers of engines, boilers, cranes, machine tools, or blast furnace operators who desire a representative in that section. Address

"AGENCY."

office of *The Iron Age*, 509-510 Hamilton Building, Pittsburgh, Pa.

FOR SALE.

One "Washoe" Press for making Axe Polls Pick and Mattock Eyes, weighing about 25,000 lbs., in good condition.

DANIEL L. HEISKELL,
Wheeling, W. Va.

KOKOMO, INDIANA.

Are you a Manufacturer?
Do you expect to Manufacture?
Is Fuel an item of expense in your line?

If so, come to Kokomo and get free gas for fuel and light for all factory purposes, free land for your factory sites. Shipping facilities the very best, and every point of advantage a business man can ask in a wide-awake, modern city of 15,000 population, in the heart of the great Gas belt of Indiana. Write for catalogue.

Kokomo Enterprise Co.,
KOKOMO, IND.

A 16-inch SHAPER.

Makers: Gould & Eberhardt.
Splendid condition; low price; good value.

A 16 in. x 8 in. Hendey Lathe.

Used but a short time.
A splendid tool.
A good purchase.

The Scranton Supply and Machinery Co.,
Scranton, Pa.

FOR SALE.

Four Cylinder Boilers good for Stacks, 15 ft. long, 6 ft. diameter. Address

"BOILER,"

Office of *The Iron Age*, 220 South 4th St., Philadelphia, Pa.

FOR SALE.

1 Battery of three Boilers, 38 in. diameter, 24 ft.; two 18-in. flues in each; steam drum and mud drum; front and grate bars... \$475
1 Doctor Pump, 4½ x 13½ stroke..... 500
2 Knowles Pumps, 8-in. discharge each..... 450
1 Battery of two Boilers, 48 in. x 24 ft.; two 10-in. and four 8-in. flues, front grate, breeching and stack..... 475
All in good order. Address
"BATTERY,"
43 East Third St., Newport, Ky.

WANTED.

A second-hand Electric or Gas Engine for freight elevator, with or without car.
CHAS. WEILAND,
143 Chambers St., New York City.

For Sale, Cheap.

200 tons of 60-pound Second-hand Steel Rails.

Suitable for relaying. F.o.b. cars Buffalo, N. Y. For prices, &c., address
J. H. RICHARDSON & CO.,
Pittsburgh, Pa.

BLOWERS FOR SALE.

Nos. ¼, ½, 1, 2, 3 and 6 Root's Pressure Blowers, in A1 order and cheap.

Also 15 horse Upright Engine and Boiler.

COOKE & CO.,

163 and 165 Washington St., New York.

FOR SALE.

One 500-light Springfield Gas Machine, complete, good as new; used but a very short time. Electricity substituted, cause of sale. Price reasonable. Apply to

SOMERS BROS.,

3d Ave. and 3d St., Brooklyn, N. Y.

FOR SALE.

One pair large heavy Plate Steel Pyramid Rolls, 9 in. x 100 in. inside the housings. New and never been used.

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WANTED.

Foundry Contracts to be completed before September 1st. Capacity of works, 9 tons per day. Can make close prices and prompt shipment.

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Any Company

contemplating the expenditure of a large amount in the establishment of a manufacturing industry, requiring the use of a thoroughly equipped Machine Shop, Boiler Shop, Foundry and Smith Shop plant, well located on competing trunk lines of railroads and in a good labor market, is invited to address

STIMSON, WILLIAMS & CO.,

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FOR SALE OR RENT.

Manufacturing Property.

Having purchased the Auburn Manufacturing Company's plant, with greater facilities for manufacturing carriage forgings, which my increasing trade demands, I offer my former plant for sale or rent, which consists of two-story stone and wood building, 60 x 30, and three-story stone and brick building, 75 x 40. Also forge shop, 22-ft. posts, 150 x 54, with large double windows between each bent. 50 x 30 boiler house. Splendid water power, 11 ft. head. One 64-in. American Turbine. One 24-in. Little Giant Turbine. 200 ft. 2½ Cold Rolled Iron Shafting. 40 ft. 2½ Cold Rolled Iron Shafting. 60 ft. 2-in. Cold Rolled Iron Shafting. Furnished with self-oiling boxes. Water wheel governor; 4-ton Buffalo Scales. The premises cover about 2½ acres. Shipping facilities of the best. Located near N. Y. Central and Philadelphia and Reading depots. Will be sold cheap and on easy terms or rented. For particulars address

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Responsible parties to manufacture and sell on royalty, a cheap portable steel or iron **CULVERT BRIDGE**; it is adapted to all small streams, runs, etc., in roads, streets, **RAILROADS**, etc.; improved roads in the order of the day; use this bridge, put it below the level of the road, cover it over and thus prevent jarring and wear and tear of vehicles, etc. Apply to

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Can we interest you in

COLORADO AND WYOMING

lands or deposits of **Graphite** for paint, facings and bearings; **Mica** for cutting and lubricants; **Mineral Paints**—red hematite, ochres and sienna; **Magnetum**, **Kaolin**, **Zinc Oxide of Lead**, **Sulphur**, **Borax**, **Alum**, **Asphaltum**, **Iron** and **Coal**?

BARTLEY REESE & CO.,

1532 Curtis St., Denver, Col.

RECEIVER'S SALE.

Joseph Lautner, having been appointed Receiver at No. 435, December term, 1892, Common Pleas Court No. 1, of the wholesale hardware firm of Joseph Lautner & Co., doing business at Nos. 214, 216 and 218 Ohio St., Allegheny, Pa., now offers for sale the entire stock of the said firm as a whole, consisting of a complete stock of Hardware, Tinware, Wagon Makers' Woodwork, Blacksmith and Carpenter Tools, Builders' Hardware, &c., &c. Address all communications to JOSEPH LAUTNER, Receiver, No. 218 Ohio St., Allegheny, Pa.

ATTENTION, CAPITALISTS.

A mechanical engineer, with long years' experience in manufacturing and patentee of a superior automatic Corliss engine, which can be seen in operation, desires to start a new works in the Western States, and invites correspondence from parties who are willing to invest in a solid undertaking. Address

"FAIR INVESTMENT," Box 59,
Indianapolis, Ind.

Wanted to Manufacture.

One or more Hardware Specialties requiring machine work, on contract, royalty or otherwise. Inventors or others interested, address

"OPPORTUNITY,"

office of *The Iron Age*, 312 The Cuyahoga, Cleveland, Ohio.

FOR SALE CHEAP.

One Slide Valve Engine, with variable expansion cut off valve. Cylinder 18 in. x 36 in.; heavy band fly wheel 12 ft. 3 in. diameter x 20 in. face; shaft 7 ft. 9 in. long x 6¼ in. diameter; cylinder rebored, valves faced and new piston and brasses put in two years ago. Engine is in good condition and can be seen operating our works till July 1st. Reason for selling, it is too large for our work and will be replaced by a more economical engine.

W. AMES & CO., Jersey City, N. J.

FOR SALE.

Four 250 horse-power Hazelton Tripod Boiler Frames, in good condition. Address

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of Hardware or Machinists' Specialties desiring to be represented in New York City and vicinity, will find it to his interest to address

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We are centrally located, active workers and can furnish best of references.

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HAYDOCK & BISSELL

Successors to

ROBERT R. HAYDOCK & Co. and E. BISSELL & Co.

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Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

AMERICAN MANUFACTURERS

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A light Hardware manufacturing business; \$2000 to \$3000 required. Address

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Wanted, Business Manager for engineering business; one acquainted with engineering and manufacturing business preferred. Must be of high standing and capable, and able to furnish first-class references and to control a small amount of capital. To the right man an unusual opportunity is open to get a good and paying position where money invested will pay large returns without risk. Address

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Two belt power Hammers, either No. 10 or No. 15, in good condition. Address

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An established **Hardware** business of ten years' standing at Santa Fé, New Mexico. Stock fixtures, etc., well assorted and in first-class condition. Large store building and warehouses; lot 66 feet running through from street to street. Largest trade, leading trade (almost exclusive cash); good location. All goods at cost and carriage. No bonus required for good will of trade. Water storage for irrigation now building by Eastern capitalists at estimated cost of \$250,000. The climate has not its equal anywhere; altitude, 7000 feet. Terms spot cash. Reasons for selling, wish to retire from business. Only those who mean business need apply. Please call on or address E. D. FRANZ, Santa Fé, New Mexico.

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to towns of 5000 and upwards, including Cincinnati, Pittsburgh, Cleveland, Detroit, Chicago, St. Louis, Louisville and intermediate territory.

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JAS. H. GOLDEY, Treas.

CHARLES WEILAND.

I make a special business of buying and selling Job Lots of

HARDWARE AND CUTLERY.

Tools and Second Quality Files a Specialty.
Send for Catalogue.

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The Frasse Company,

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WANTED.

To furnish reasonable estimates on specialties in light metal work.

CLARK & COWLES, Plainville, Conn.,
Manufacturers of Clock Trimmings, Rivets, Springs &c.

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Old Reliable

HARDWARE PRICE BOOKS.

Send for new Illustrated Circular.

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Make the same entry but once. A Ledger in place of a full set of books. Convenient forms for all entries. Easily applied, simple, saves time. West's Self-Proving Balance locates every error. Send 8 2-cent Stamps for illustrated 16-page pamphlet.

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Hardware manufacturers and specialty dealers desiring to place an agency in Philadelphia will please communicate with firm having large store in center of the hardware district and traveling Pennsylvania, Maryland and New Jersey thoroughly. We pay rent and all expenses. Will push your line on commission, handling the accounts if preferred. Address "AGENTS" office of *The Iron Age*, 220 South 4th St., Philadelphia, Pa.

FOR SALE.

A very valuable U. S. Patent for a Gas Furnace. It gives a complete combustion of the gas and prevents the tar from condensing before going into the furnace. It is very economical and inexpensive, and can be put into any existing furnace or boiler. It has been in practical operation for three years and can be seen at any time. Inventor has had practical experience with furnaces for 30 years. All further particulars can be had on application to JOHN ELLIOT, Ansonia, Conn.

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A large and influential Commission House in Germany of first-class standing wishes to have the sole Agency of such American specialties in the hardware line, &c., as will find a ready sale in Germany against European competition. Manufacturers, and such only whose makes will warrant success, will please specify articles, terms, &c. and address "GERMANY," office of *The Iron Age*, 96-102 Reade St., N. Y.

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Established 21 years. The whole or half interest of a general Hardware store and mill supply in Philadelphia. Address "WHOLE OR HALF," office of *The Iron Age*, 96-102 Reade St., N. Y.

Factory Sites Free.

At Keyport, N. J. Twenty miles from New York, on Raritan Bay. Boat and train communication with New York and other markets; water works and other advantages. Reasonable inducements to responsible manufacturing concerns. Address

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A FIRM well acquainted in the Hardware trade, and office centrally located on Chambers street, would like to represent manufacturer of salable article. Address

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Paper, 25 cents.

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Undisplayed Advertisements for Situations Wanted not exceeding fifty words Fifty Cents each insertion. Additional words one cent each.

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NOVELTIES, steel rules, measuring tapes, &c. —Management of well equipped factory desired by man thoroughly experienced in manufacture of steel measuring tapes, corkscrews, hair curlers and hardware novelties generally. Address "FASH," office of *The Iron Age*, 96-102 Reade St., New York.

CHEMIST.—A position with an iron company; thoroughly experienced in the analysis of iron ores, pig iron and steel; good references. Address "SILICON," office of *The Iron Age*, 96-102 Reade St., New York.

AS TRAVELING SALESMAN; have had ten years' experience in England in the carriage, axle, springs, iron and steel and general hardware business; age 32 years; best of references. Address "AXLES," No. 68, office of *The Iron Age*, 96-102 Reade St., New York.

AS SUPERINTENDENT of iron or steel mill by a practical man; am also capable of building iron or steel mills, having built five, all running successfully; no objections to going abroad; will accept position as assistant builder or running of works; can furnish best of references from former employers. Address "WALTER," No. 68, office of *The Iron Age*, 96-102 Reade St., New York.

TURBINE WHEELS.—Expert Designer of turbines is open for engagement; is able to design all systems, styles and sizes with the highest possible percentage of efficiency. Address "TURBINE," office of *The Iron Age*, 96-102 Reade St., New York.

POSITION in the hardware business is desired by a young man who has had four and one-half years' experience in that business and can give good references both as to character and business qualifications. Address M. A. BOOKER & Co., P. O. Box 526, Newport News, Virginia.

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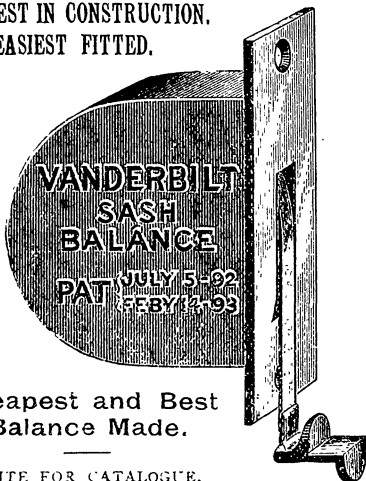
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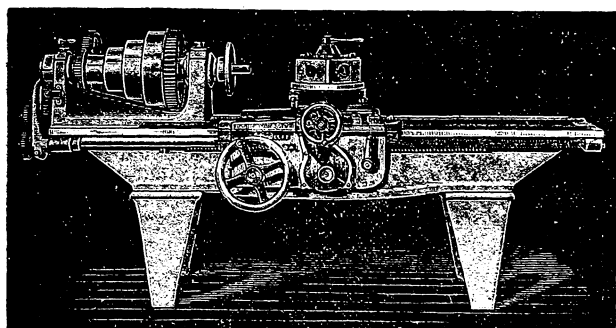
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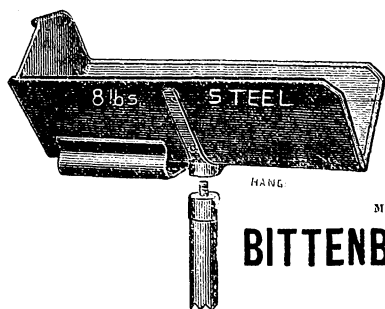
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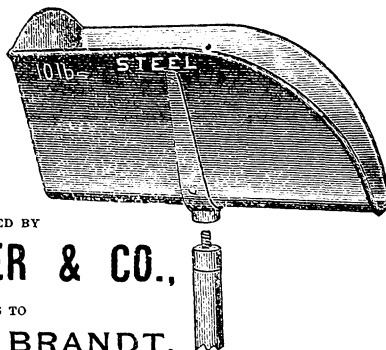
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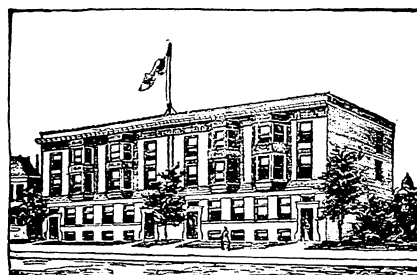
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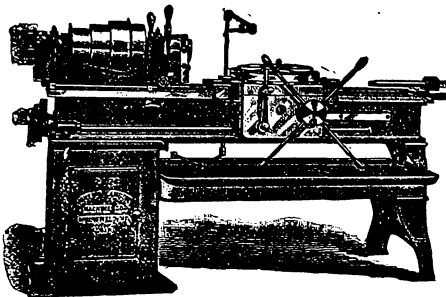
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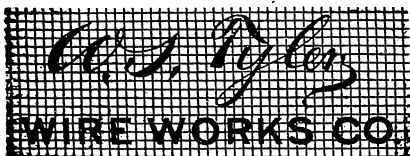
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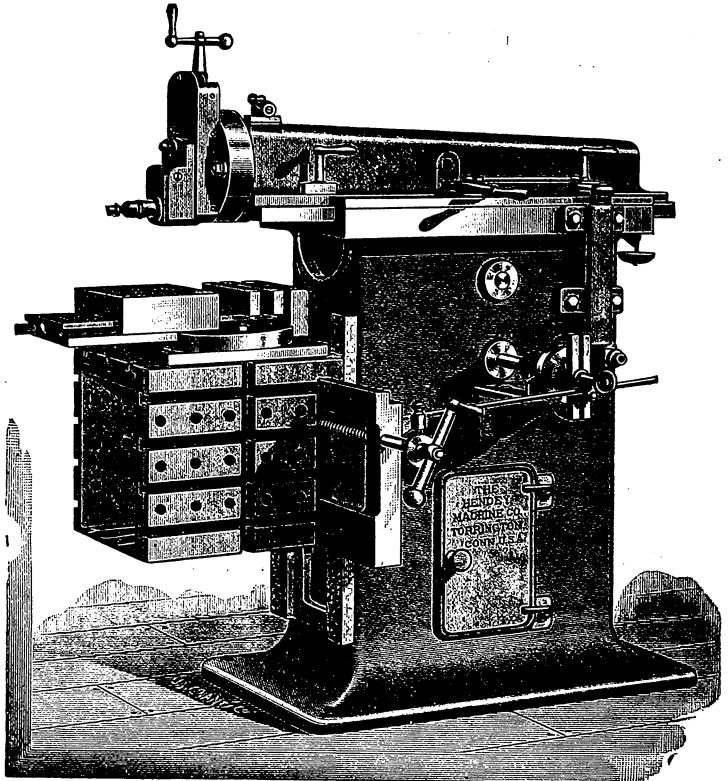
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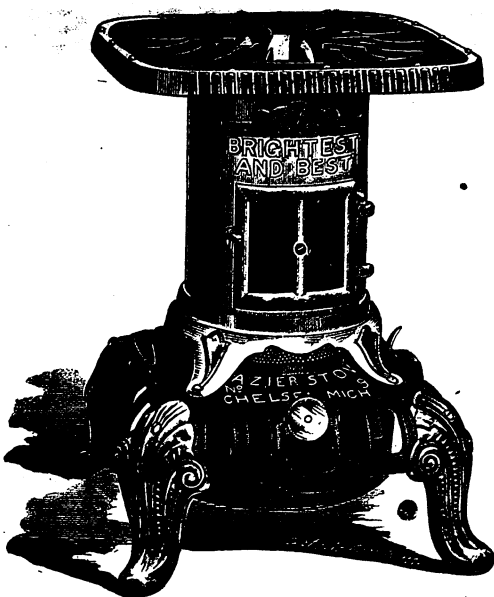
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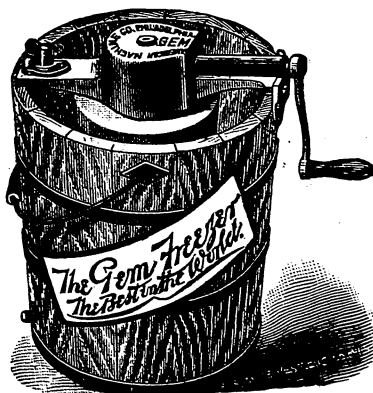
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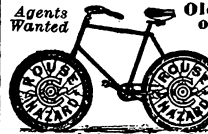
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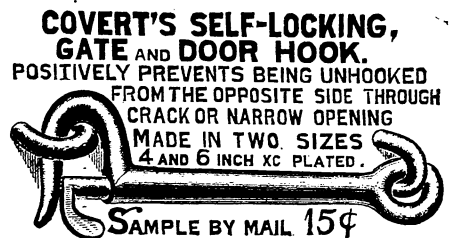
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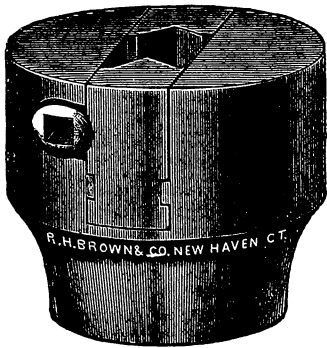
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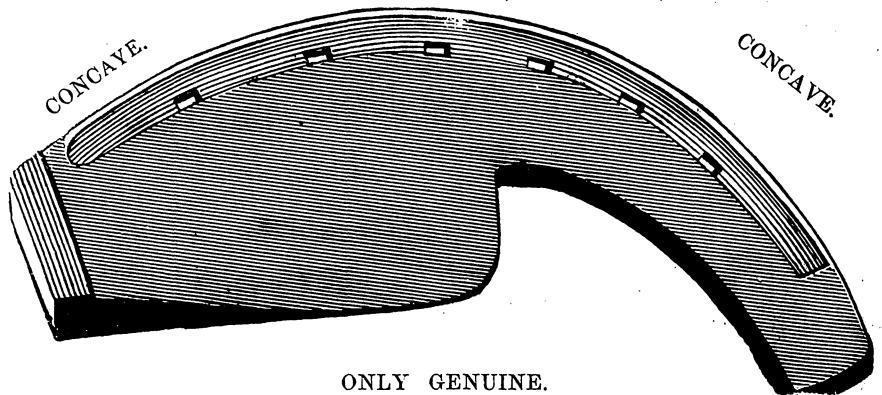
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HAIR FELTING for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

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ONLY GENUINE.

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No. 0, Full Length, Concave, 4 1/2 inches, weight per set of eight shoes, 2 pounds.	
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Packed in boxes or kegs of 100 pounds, half each rights and lefts. Full weight, and no charge for packages.

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For orders of One Ton or more.....	9 cents per pound.
" 1000 lbs. or more.....	9 1/2 " "
" 500 "	10 " "
" less than 500 lbs.....	10 1/2 " "

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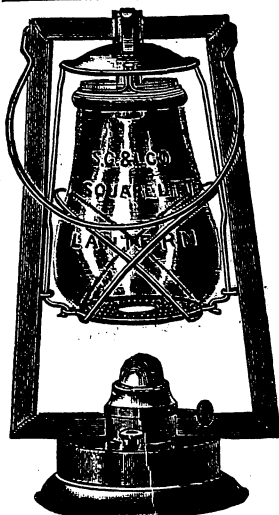
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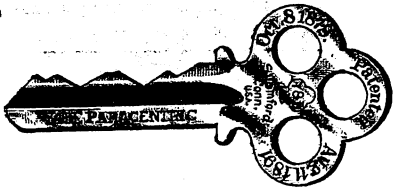
Tubular Lanterns,

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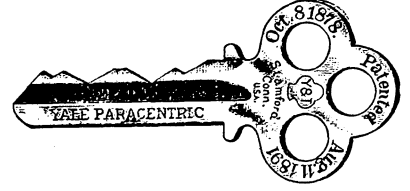
Tubular Hanging Lamps,

Tubular Station Lamps,

Tubular Driving Lamps, etc.



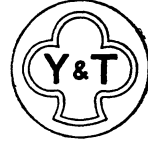
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**LePage's
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It is the strongest and best glue made. It has been
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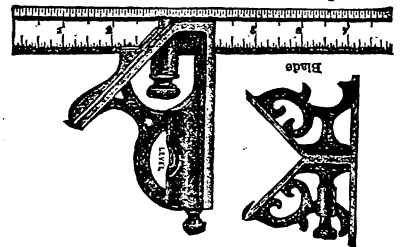
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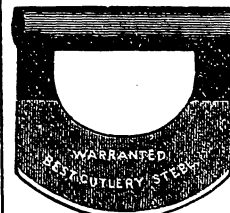
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SHELF BOXES**

Made of Wood.
No screws or
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Handle and Blade Formed in one piece.

Always Clean. Indestructible.

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THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

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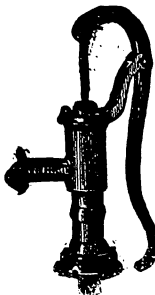
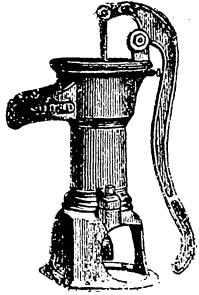
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A LARGE CAPACITY, AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 180.

Fig. 78.



or wherever it is desired to raise a large quantity of water by hand power.

The pump has large valves (accessible by hand) and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

Capacity from 3,000 to 4,500 gallons per hour.

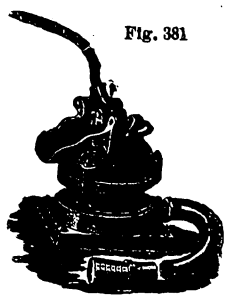
These pumps are simple, durable and low priced.

Made either as shown in cut for Hose or for IRON Pipe Suction underneath.

Send for Circular and Price List.

Fig. 209.

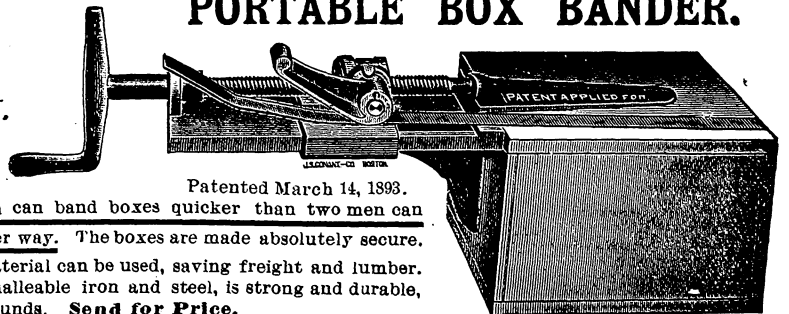
Fig. 381



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HAND & POWER PUMPS, WELL SUPPLIES & C. VERTICAL STEAM PUMPING ENGINES.
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Mounted on reels and always ready for use and convenient to handle. Easily and quickly binds shipping cases and crates in a neat, strong and substantial manner.

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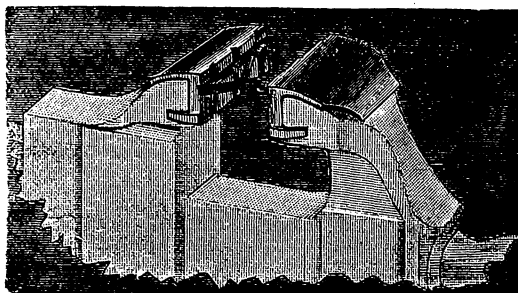
No. 1, per reel of 2000 ft. \$4.50 net.
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Pliers for cutting wire, 50 cents extra.
No. 1 for cases under 800 or 400 pounds, and No. 2 for all heavier cases.

Buffalo Specialty Mfg. Co.
Sole Manufacturers,
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WORLD'S FAIR PUMPS
THE LARGEST PUMP AND TOOL WORKS EXCLUSIVELY IN THE UNITED STATES
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Ashland Pump and Hay Tool Works.



BINCHAM PATENT VISE JAW CAP

Will Fit any Kind of Vise.

For protecting finished work. Will hold finished rods of any shape without injury.

3/4 inch, per pair, 40 cents.
1/2 " " " " 50 "
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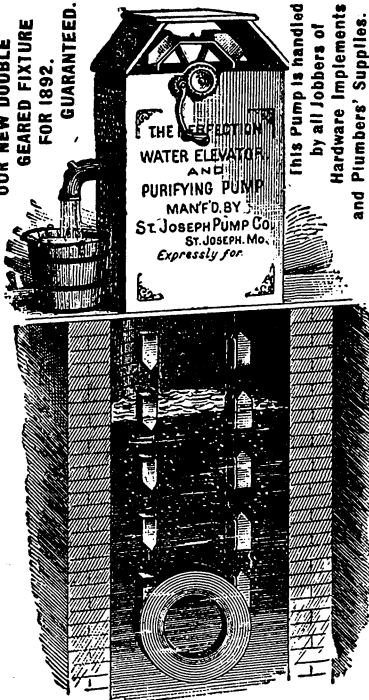
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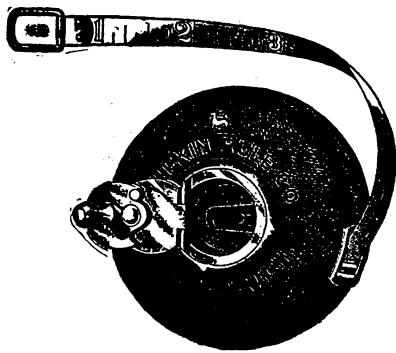
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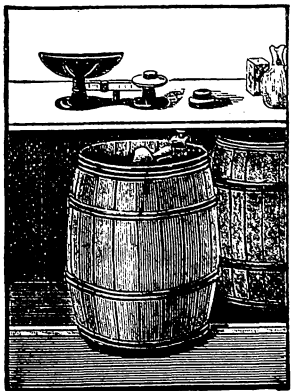
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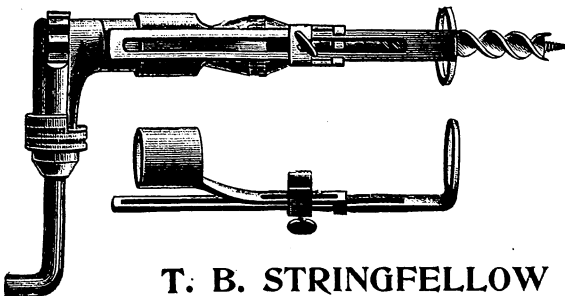
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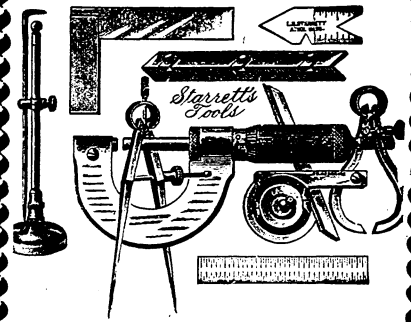
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KEOLER'S PATENT
Galvanized Iron Tubing
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Is guaranteed to be

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IT is made of best quality Galvanized Iron, which will not rust nor accumulate filth.

IT only weighs one-half pound to the foot, wet or dry, while wood tubing saturated with water weighs six pounds or more per foot.

IT will last longer than wood tubing.

IT will not freeze in any climate.

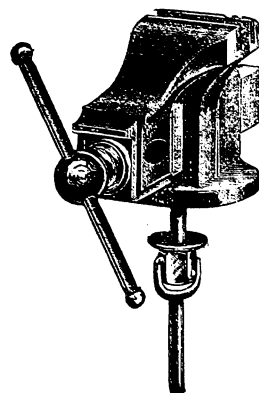
IT can be attached to any make of curb.

We also manufacture a Galvanized (all) Iron Curb. Address

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OFFSET JAW
VISE.**

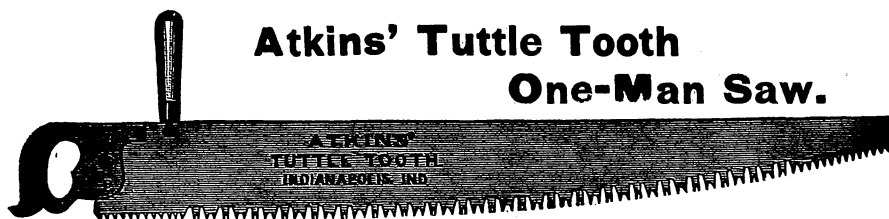
Specially adapted for drill press work where chucks cannot be used and equally good for special or regular bench work.

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We make a Specialty of Fine High-Grade Saws.

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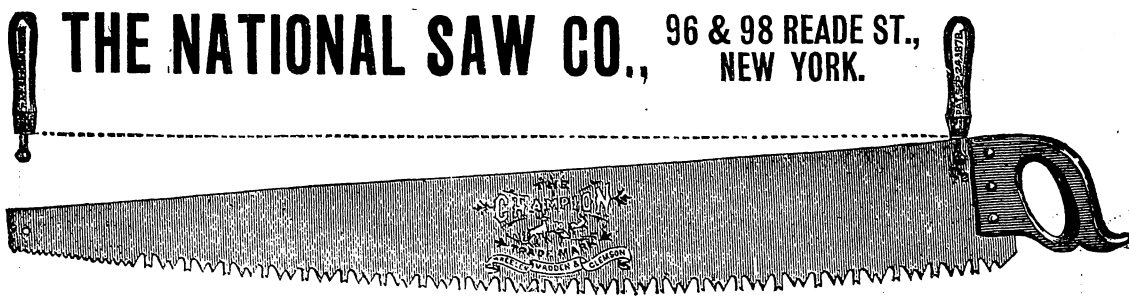
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ATKINS' TUTTLE TOOTH.

The Original Tuttle Tooth—the Best Saw in the World for the Money.



THE NATIONAL SAW CO., 96 & 98 READE ST., NEW YORK.



This saw is three gauges thinner on back than cutting edge, ground a true taper, making it the stiffest and easiest cutting one man saw produced.

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- 1.—Teeth of uniform thickness.
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- 3.—Three Gauges heavier on ends than in center of back.

For 10 YEARS the Simonds Crescent-ground Cross-cut Saw (the only Saw on the market possessing these **ESSENTIALS**) has stood out prominently in contrast with all other makes of cross-cut saws. It has been the **CRESCENT-GROUND** against the **FIELD-MODERN IDEAS** against **ANCIENT METHODS**.

TO-DAY the Crescent-ground Saw is in use in every important lumber camp in the United States. Manufacturers have endeavored to imitate it, but the Machinery producing the Saw, the Process by which it is produced, and **THE SAW**, are patented. All imitations are but involuntary acknowledgments of the **SUPERIORITY** of

THE CRESCENT-GROUND CROSS-CUT SAW.

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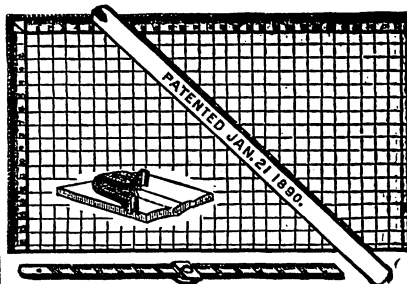
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The Canton Glass Board.

Cuts any Fraction of an inch by Eighths.

Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

—ALSO—

IMPROVED TRAMMEL RULE for Cutting Circles
From 3 inches up to 48 inches, Segments,
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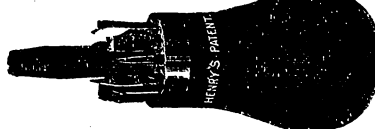
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The Canton Saw Co., Canton, Ohio.

HORACE E. BRITTON, Stoughton, Mass.,

Manufacturer of the

HENRY'S PATENT COMBINATION
HAFT,



AND OTHER TOOL SPECIALTIES.
The Combination Haft contains
six Brad-Awls, one Chisel, Screw
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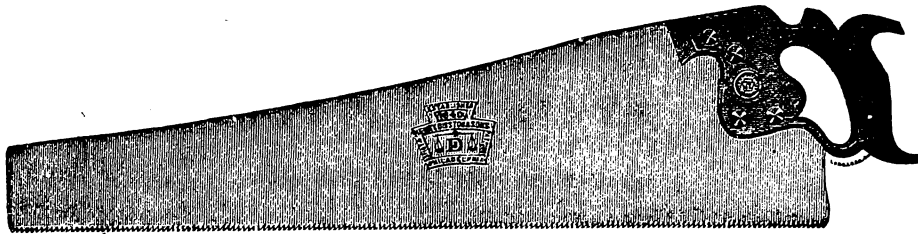
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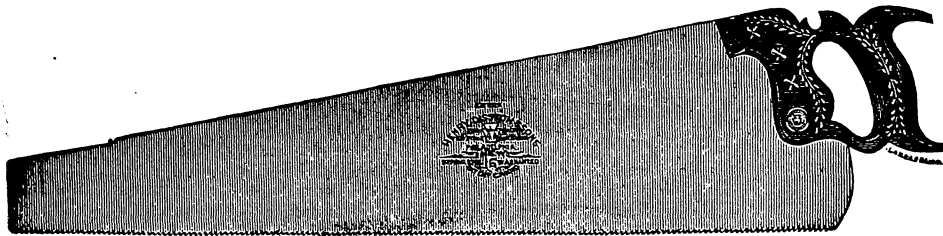
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This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important is the hollow or skew back, the success of which can best be attested by the number sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, give a full stroke of the blade without fear of catching or hooking in the work; and as the handle is put further on the blade you have a full stop on the proper point and a greater command over your Saw, by reason of being two inches nearer the point, which must give more power.

The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

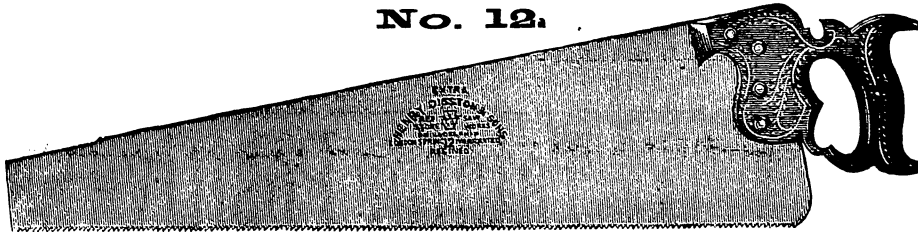
Our New No. 16 Premium Saw.



AN EXTRA FINE SAW IN EVERY RESPECT.

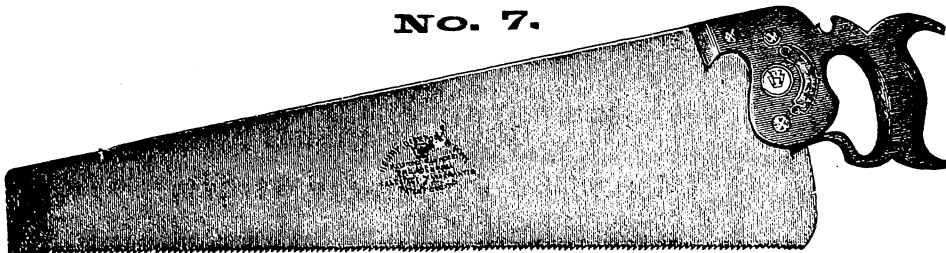
Having the Latest Close up Handle, Spring Steel Blade, Extra Thin Back, Finely Grained, with an Apple Handle and Four Brass Centennial Screws.

No. 12.



DISSTON & SONS' Extra Refined London Spring Steel, Selected and highly Polished Blade, Handle Carved and Polished, 4 Improved Brass Screws, the finest Hand Saw manufactured.

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DISSTON & SONS' Cast-Steel, Warranted, Beech Handle, Polished Edge, 4 Improved Screws, Grained Blade.

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THE

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Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

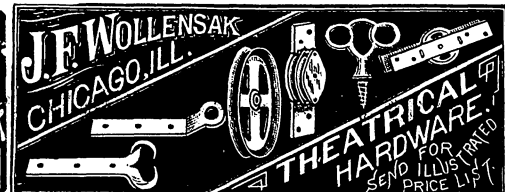
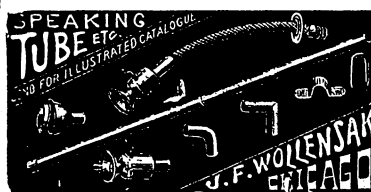
BEST	"TROJAN" HORSE RASPS.	LOWEST
CRUCIBLE		IN
STEEL.		PRICE.
STRONGEST	BANKER & WHITE,	LET
TOOTH.	(Troy File Works.)	US
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The Taintor Positive Saw Set.

Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

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84 and 86 Chambers Street, NEW YORK.

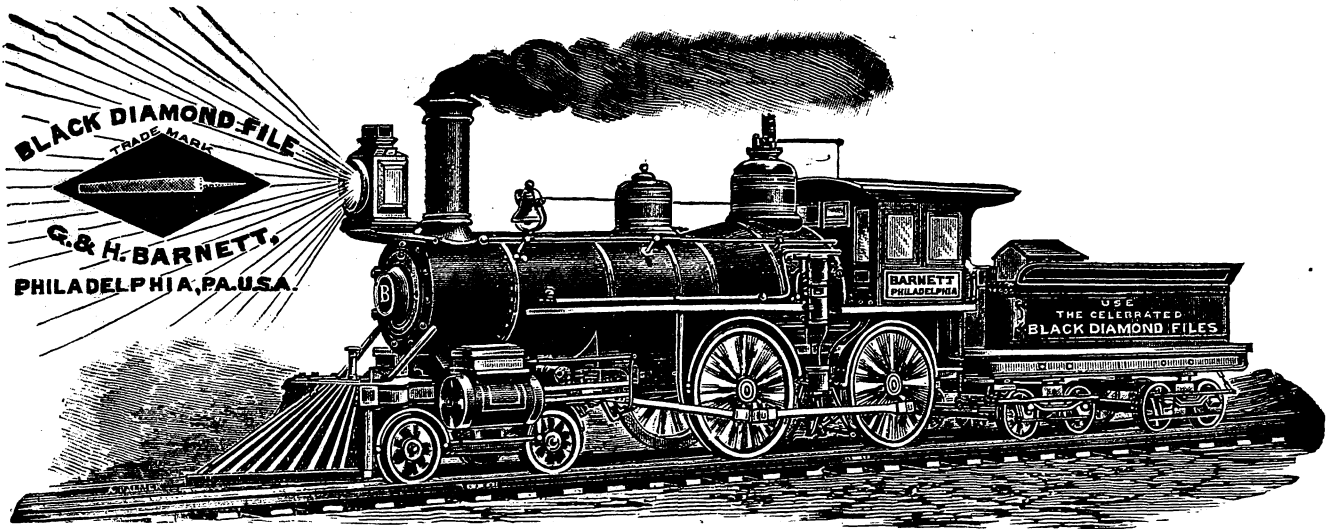


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STEEL STAMPS
For Every Purpose.
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Also Manufacturers of BLACKSMITHS' and MACHINISTS' STOCKS and DIES, PLUG and TAPER TAPS, HAND, NUT and SCREW TAPS, PIPE TAPS and REAMERS.

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3	.42	.47	.56
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2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ½ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3½ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books, when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

Wrenches.

Inches.	6	8	10	12	15	18	21
Black...	\$9.00	\$10.00	\$12.00	\$14.00	\$24.00	\$30.00	\$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

and inserted in price books, and can be used in connection with any of The Iron Age Hardware Price Books.

That the Standard Hardware Price Lists meet a want of the trade is evident from the fact that a new edition is already called for.

EVERY HARDWAREMAN SHOULD HAVE A COPY. Price 25 cts.

Stove Hollow Ware.

	POTS, KETTLES, ETC. (CAST IRON.)						Ground and Unground.
No.....	6	7	8	9	10	11	
Pots.....	\$0.65	.75	.85	1.00	1.25	1.75	
Kettles.....	.55	.65	.70	.85	1.00	1.40	
T Kettles.....	.75	.80	.90	1.00	1.25	....
Spiders.....	.27	.30	.35	.40	.50	.60	
Griddles Round	.22	.25	.27	.30	....	....
" Long..	.40	.50	.60	.75	....	....
No....	1	2	3	4	5	6	
Scotch Bowls..	\$0.35	.40	.45	.50	.60	.70	
Yankee Bowls.	.35	.45	.55	.65	.75	.90	

SCOTCH AND YANKEE BOWLS.

Glue Pots.

No.	4/0....	\$4.50	Tinned or Enameled
3/0....	5.00		
2/0....	5.50		
0....	6.00		
1....	6.75		
No. 2....	\$8.40		
3....	10.26		
4....	12.42		
5....	14.58		
6....	16.94		

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Cartridge Cases, &c.; Webster & Horsfall, Steel
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"The Improved Humphrey Hand Elevator,"
Made specially to be sold by Hardware Stores. Thousands
and in use. Catalogues on application.
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NEWARK, NEW JERSEY.
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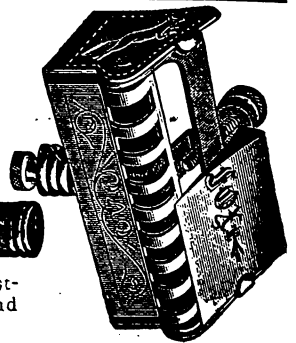
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Makes shaving a luxury; no danger of cutting. Adjust-
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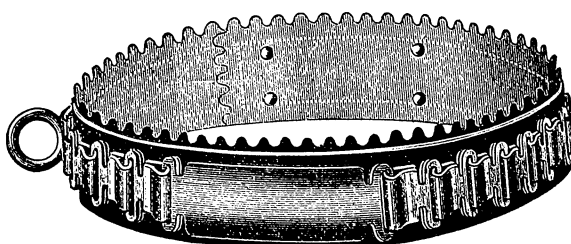
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CHAINS,**

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AND

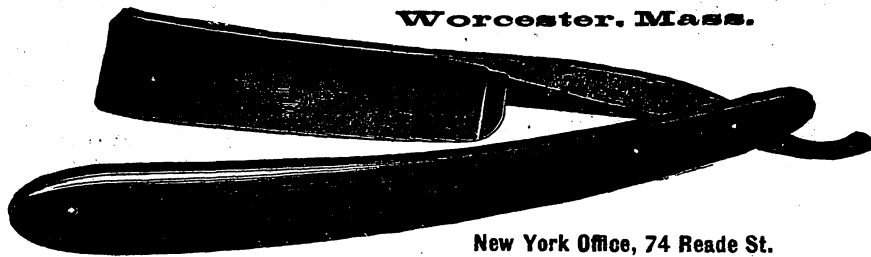
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The Most Complete Assortment in the U. S. of

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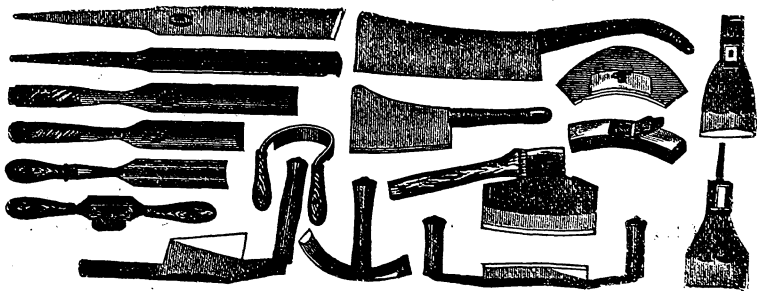
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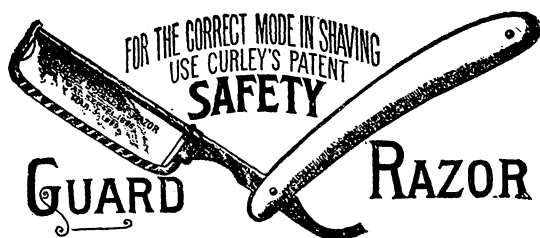
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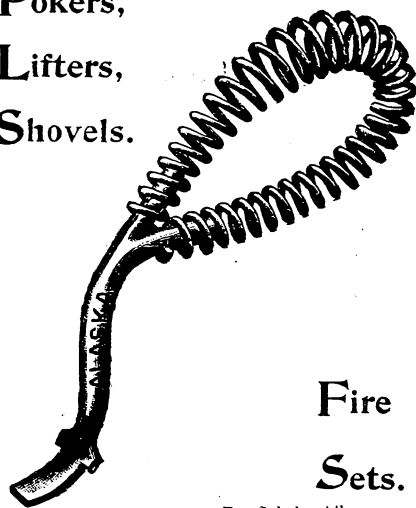
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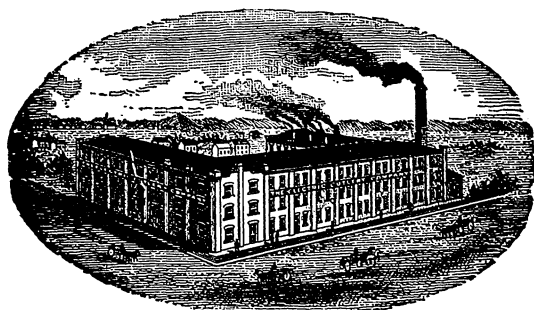
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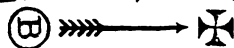
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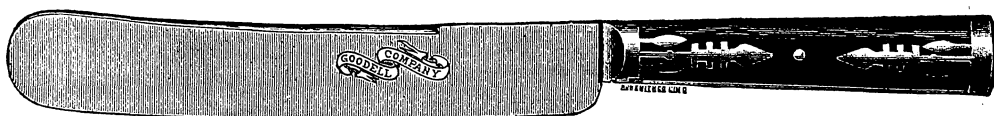


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Razors ever manufactured and especially suited for the use of
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WE CLAIM

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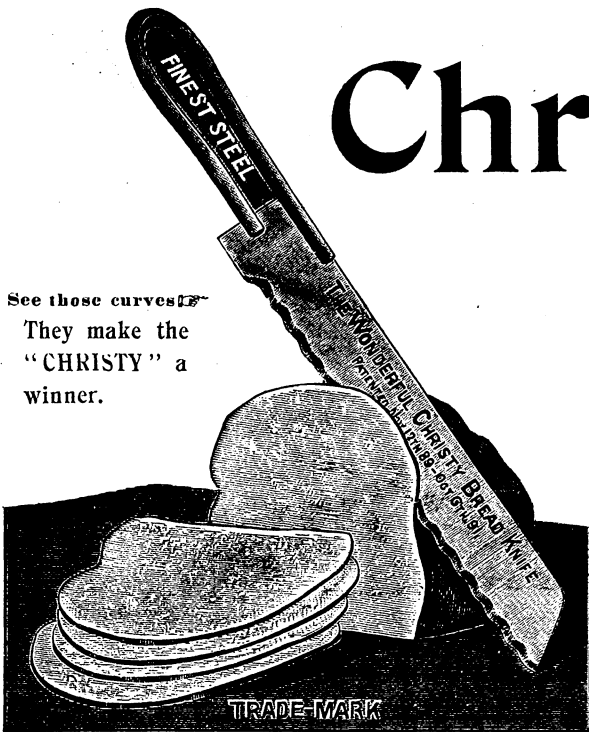
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See those curves?
They make the
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For cutting bread, meats, cake, etc., has more genuine merit than any one other household article ever made.

Show them to your customers, they'll sell themselves.

Write for a full set (don't cost much) and get our discounts to dealers.

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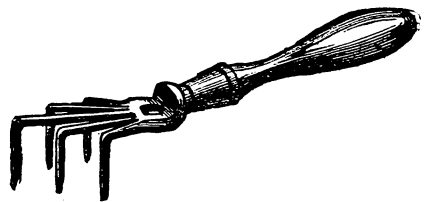
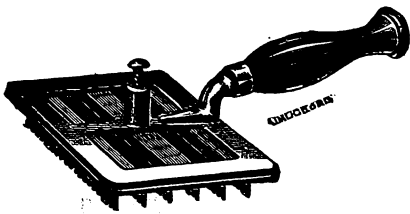
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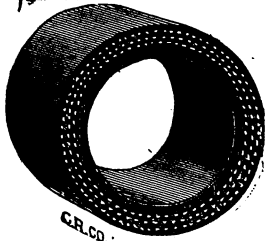
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B. B. NOYES & CO.,
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Send for full Catalogue and Prices.



NEW SEAMLESS TUBE



SALES OF
Over Two Million Feet

—OF—
GARDEN HOSE

alone during the past year,
distributed throughout
the United States, and not a
single piece complained of,
justifies us in guaran-
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Who Has Not Had Bad Hose?

Who has not lost time, patience, money, by attempting settlement for such goods?

THE CAUSE in nine cases out of ten is the lapped seam.
THE REMEDY is in buying our

PATENT SEAMLESS-TUBE HOSE,

made by machinery, the tube run like lead pipe, through a die. There is no lapped tube, no seam, no cracks, no defects: water cannot get through to rot the duck and cause the hose to burst.

Made in All Sizes and Kinds of Garden, Engine, Steam, Fire, Brewers' Cotton Hose, &c.

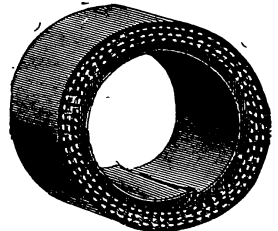
Order a Sample Bale of our Seamless-Tube Hose—Best in the World, costs no more than ordinary lapped-seam hose. The different colors, Red, White, Black, Green and Yellow, make a fine window or sidewalk attraction.

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We were awarded an order of
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Seamless-Tube
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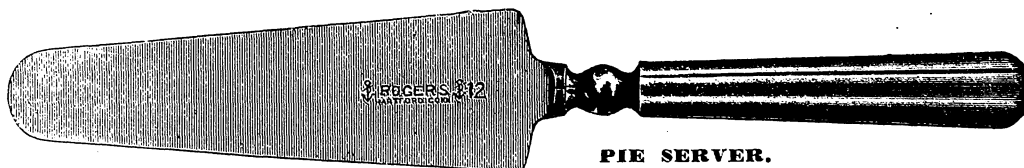
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SILVER PLATED WARE.



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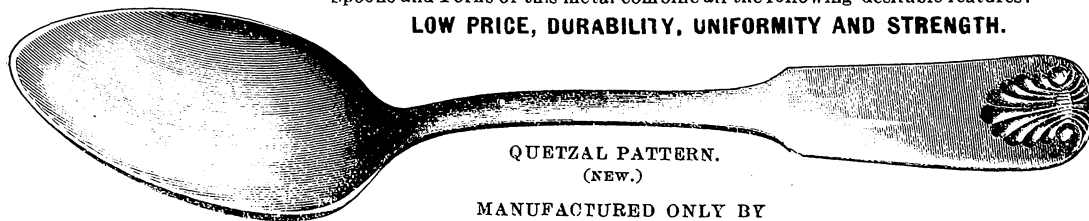
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MADE INTO SPOONS AND FORKS.

Spoons and Forks of this metal combine all the following desirable features:

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(NEW.)

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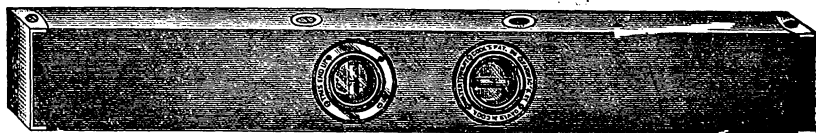
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Easily kept clean.

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Made in Wood and Iron. Every Level Fully Guaranteed.

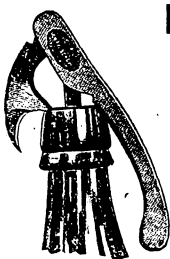
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Manufacturers of

The Davis Cork-Screw,
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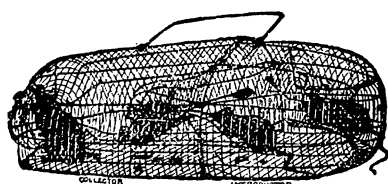
Manufacturers of

Cut Worm
Spiral Screws and
Cork-Screw Novelties.
Cut Worm Cork-Screws
for the Bar Cork Puller

FIG. 3. Showing Davis
cork-screw and fulcrum
in position to pull cork.

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GENUINE **MARTY** RAT AND
ALWAYS IN STOCK. MOUSE
TRAPS



THEY DO THE WORK.
Orders solicited. Prices on application.
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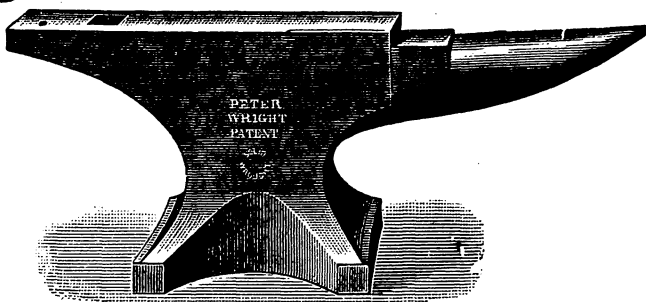
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PETER
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SOLID
WROUGHT

Fac-Simile of Trade-Mark.



Fac-Simile of Green Label.

By Royal Letters Patent.

V.  R.

PETER WRIGHT'S
SOLID WROUGHT
ANVIL
Made of Best Scrap Iron!
THE BICK FACE AND END ALL
IN ONE SOLID PIECE!

You are cautioned in buying to see that each anvil is stamped with the full trade-mark on one side and has the green label affixed to the other.

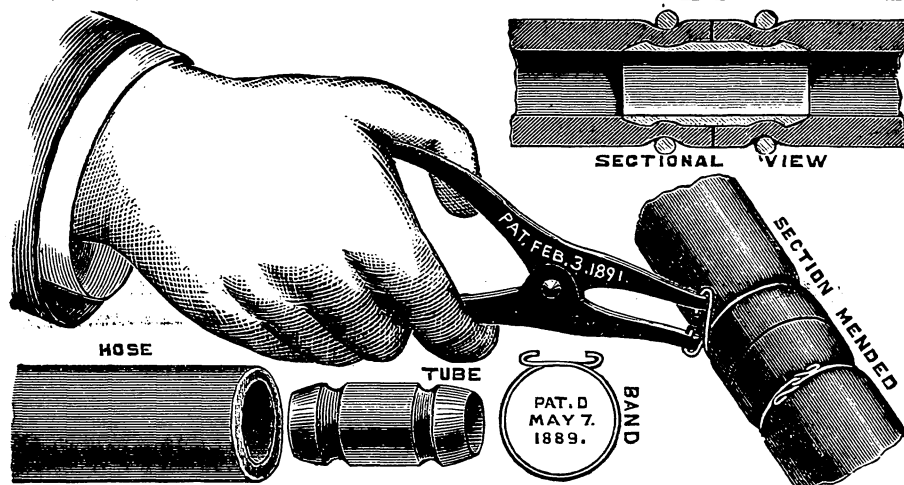
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BRITISH SECTION,
MACHINERY BUILDING.

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HUDSON'S GARDEN HOSE MENDER.



Put up in Boxes for Family Use.

Each Box Contains 1 Pair Pliers, 6 Tubes, 20 Bands.

Hose can be mended or Couplings fastened on

**CHEAPER,
QUICKER and
MORE SECURELY**

than with any other device.

Screw menders tear the rubber lining from the hose. OURS will not. If you wish to handle a good thing with a good profit write for circular and prices.

C. E. HUDSON & CO.,
LEOMINSTER, - - - MASS.



outs, Kennel Chains, &c.; also cut to lengths for manufacturers' use.

The cut represents the exact size of 6/0.

Thirteen Sizes made, 6/0 being the Largest.

The Bridgeport Chain Co.'s Triumph

Chain, made into Halters, Traces, Cow Ties, Tie-

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BRIDGEPORT, CONN.

Warranted Better than the Best

ENGLISH ANVIL

Face in one piece of BEST TOOL CAST STEEL, PERFECTLY WELDED, perfectly true, of hardest temper, and never to come off or "settle." Horn of tough, untempered steel, never to break or bend. Only Anvil made in United States fully warranted as above.

FISHER DOUBLE-SCREW VISE

IS FULLY WARRANTED STRONGER THAN ANY OTHER LEG VISE, AND ALWAYS PARALLEL. Is the best Vise for Machine Shops and Blacksmiths, and for all heavy work. ACCURATE AND DURABLE. Send for Circular.

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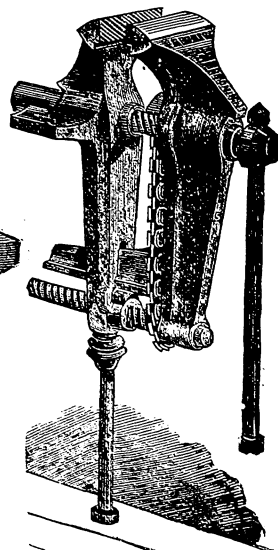
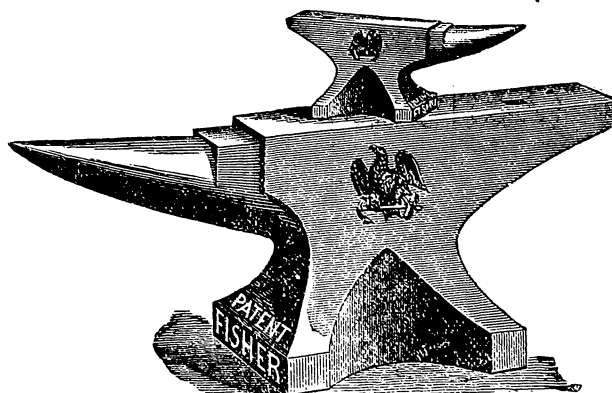
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None Genuine without our Trade-Mark,

EAGLE and "FISHER" Stamp.



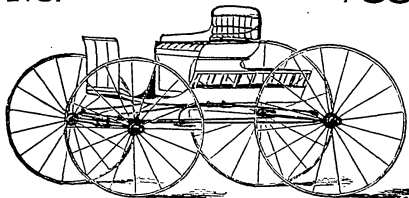


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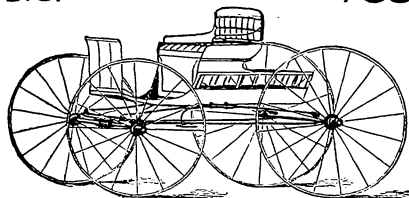
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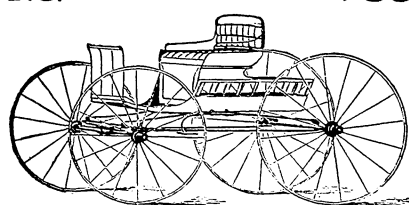
No. 700



No. 700



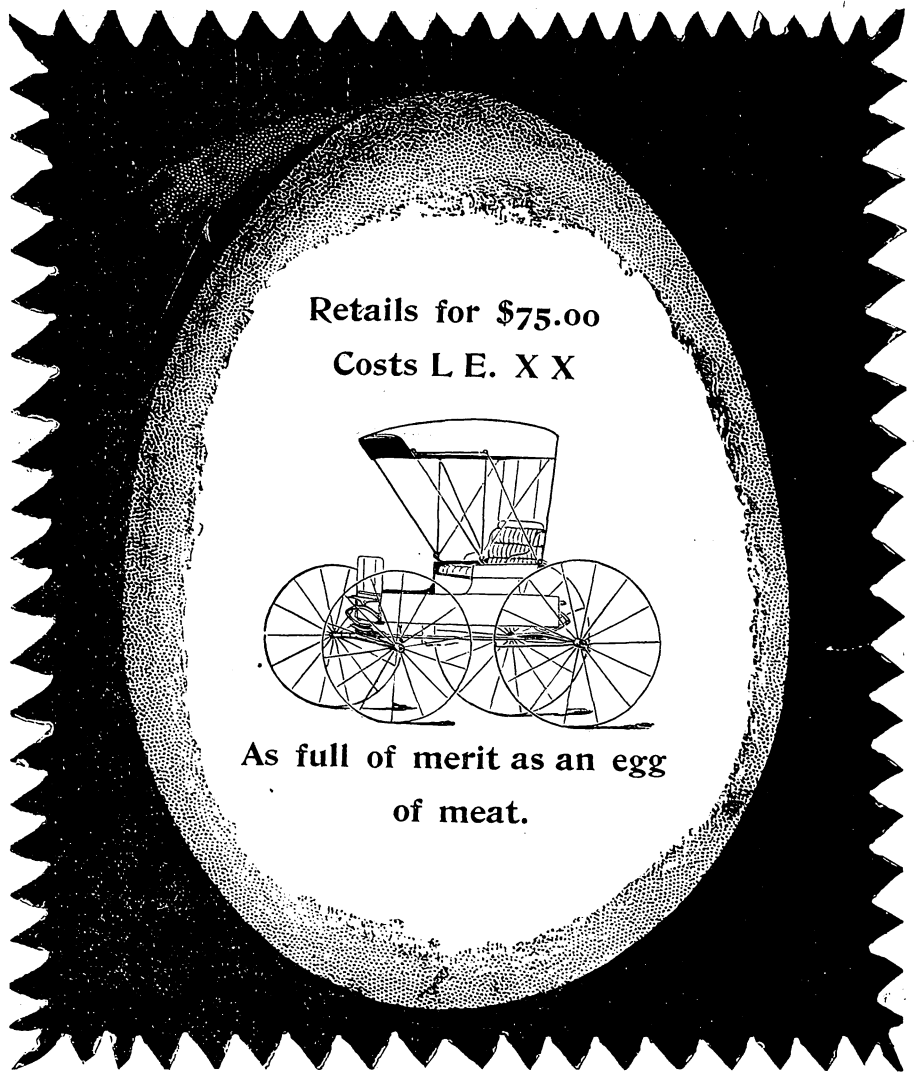
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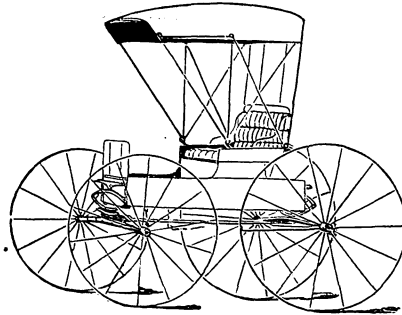
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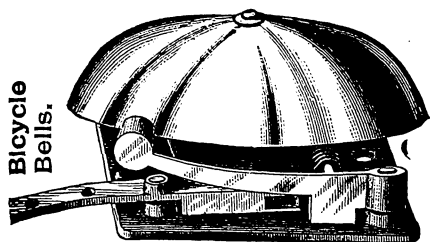


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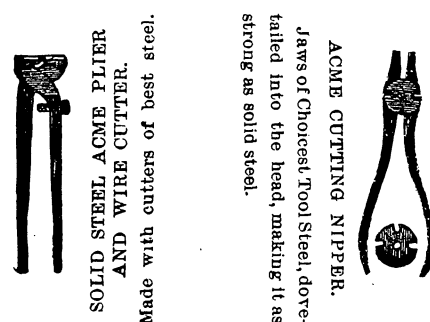
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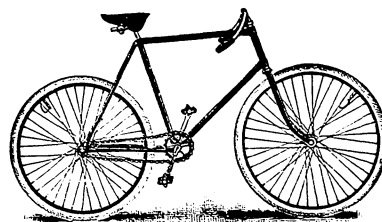
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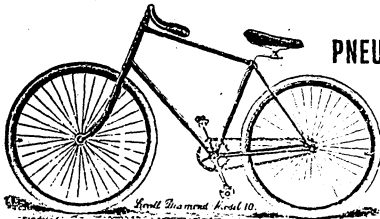
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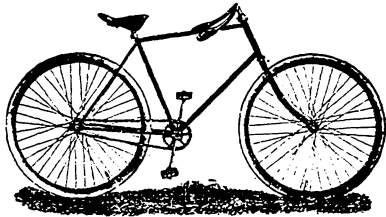
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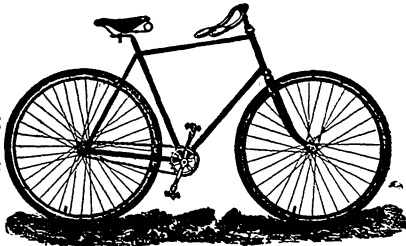
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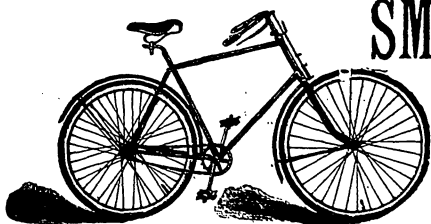
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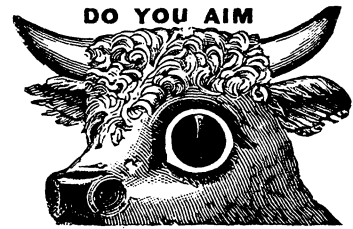
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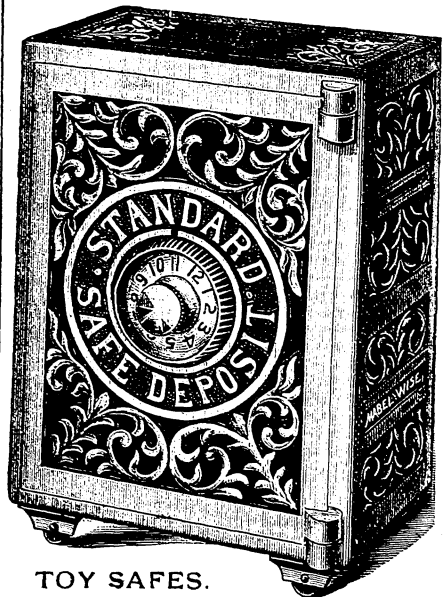
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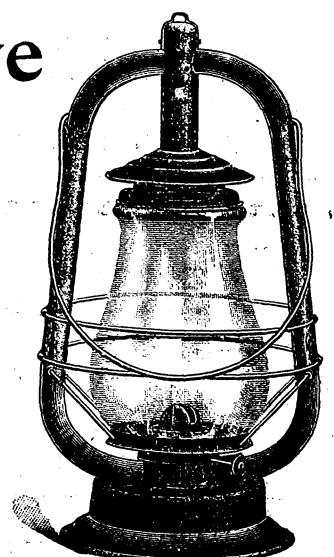
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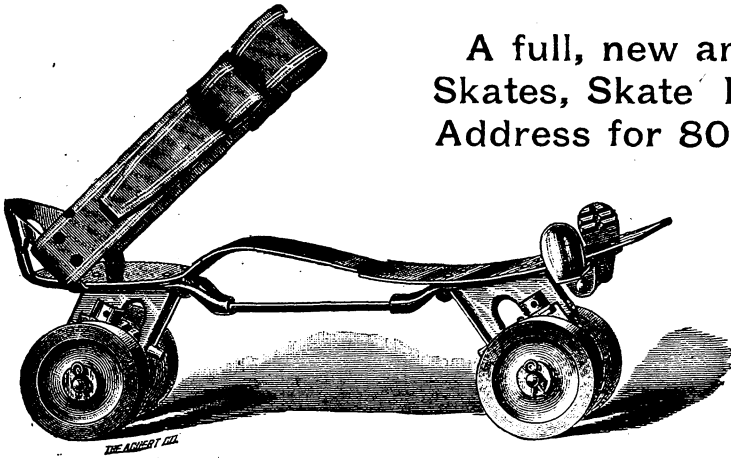
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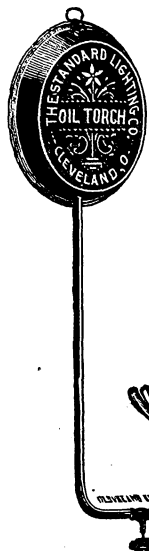
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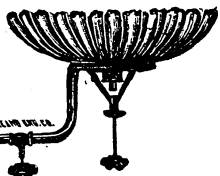


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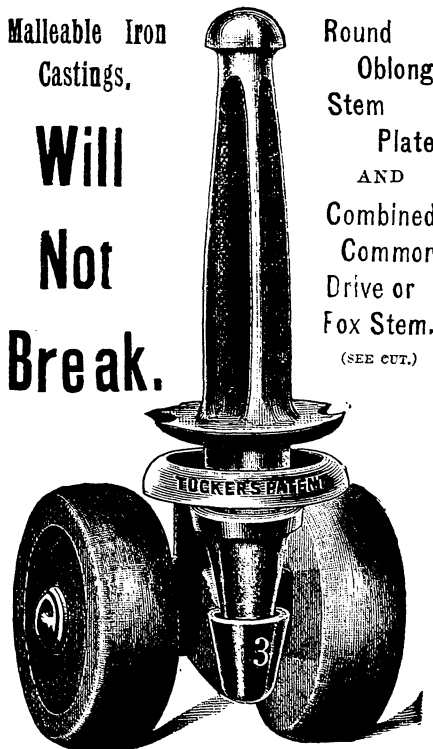
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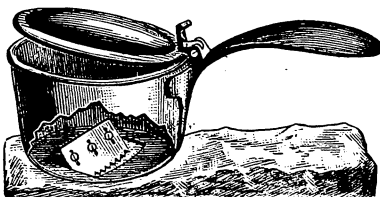
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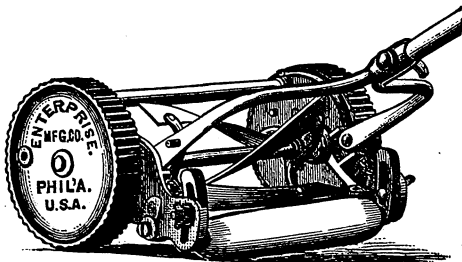
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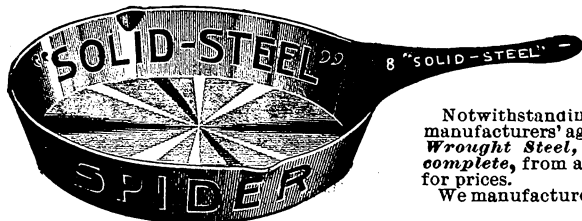
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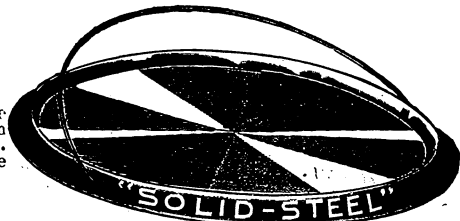
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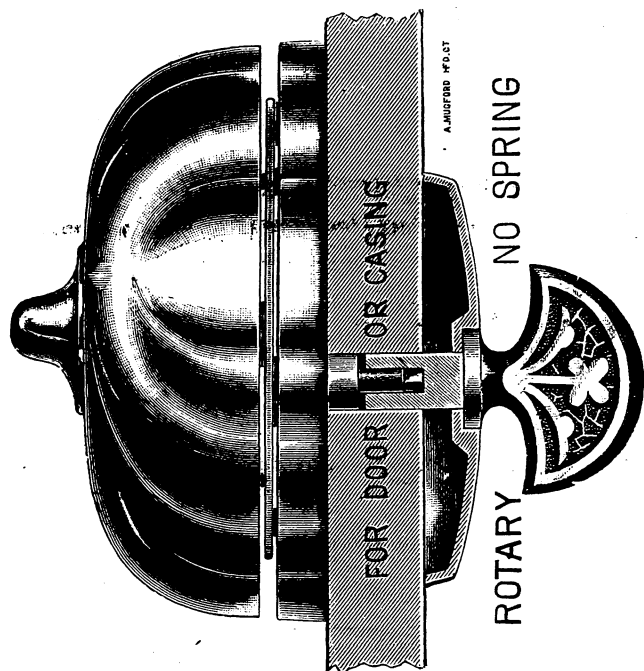
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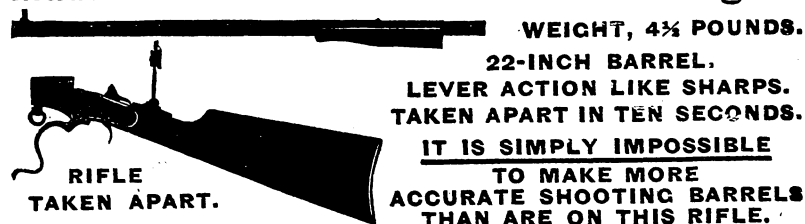
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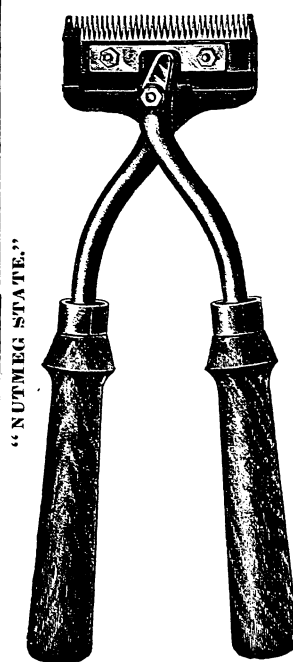
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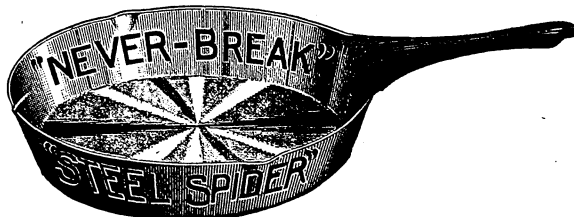
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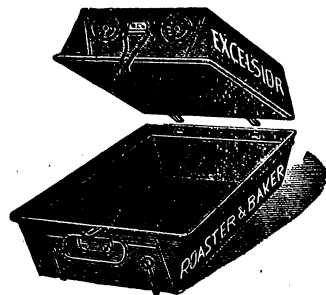
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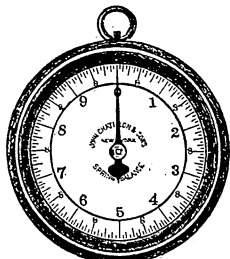
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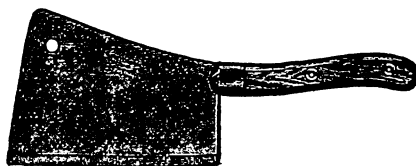


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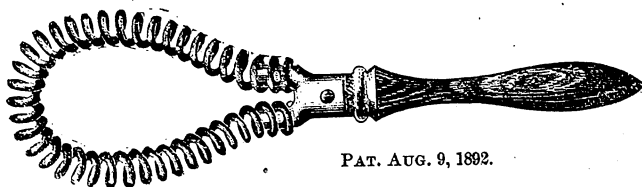
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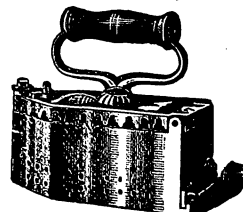
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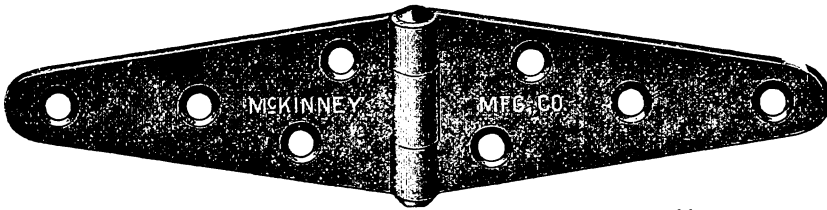
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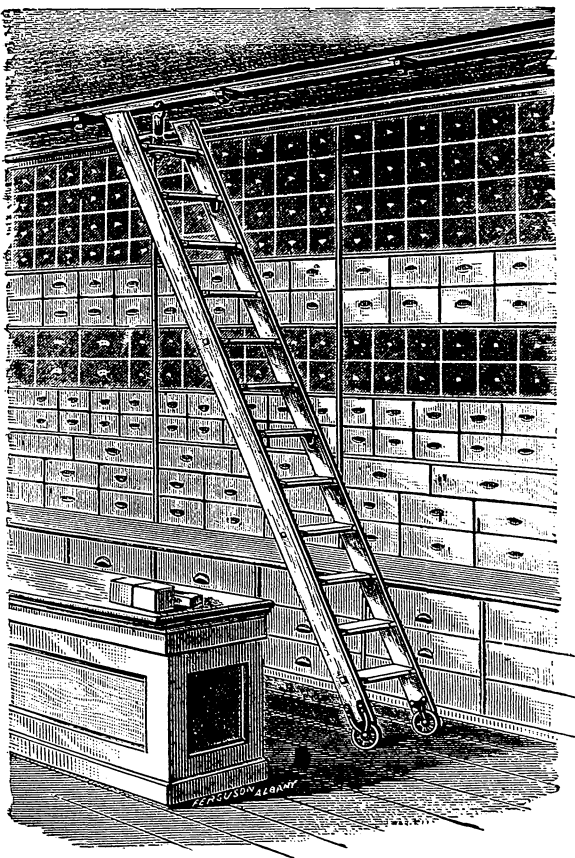
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THE "NOISELESS" STORE LADDER.

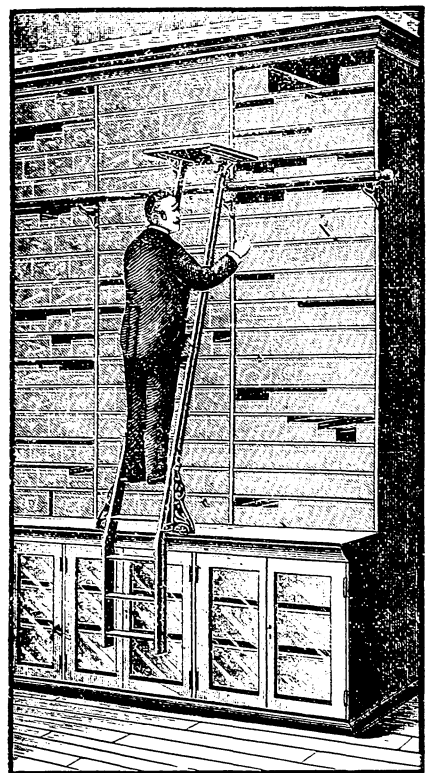


The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

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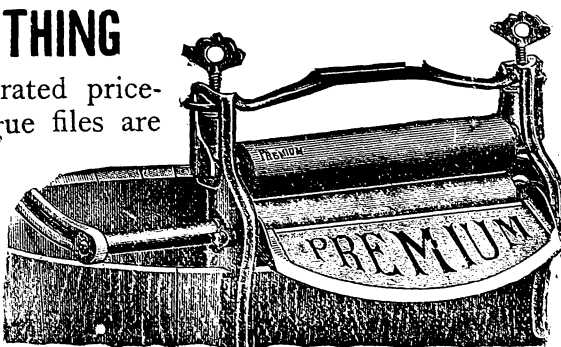
THE BICYCLE STEP LADDER

The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made. Ladders are not Suspended, but Supported from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit. Send for illustrated catalogue and prices. See this space next week for other styles.

The Bicycle Step Ladder Co., 50 State Street, Chicago, Ills.

IT COSTS NOTHING

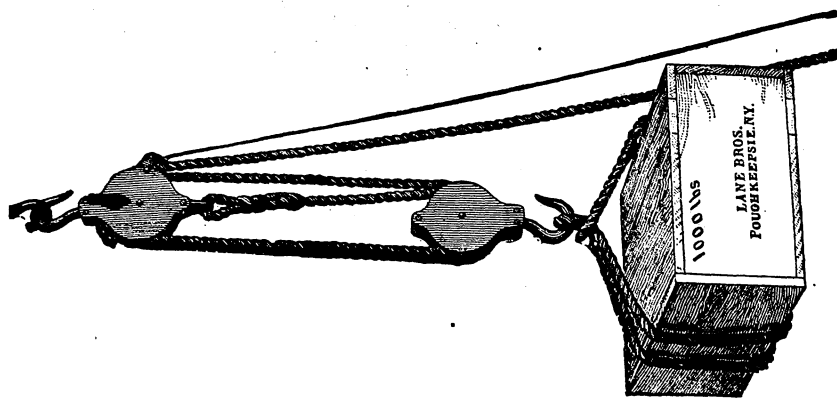
to send for our illustrated price-list, and your catalogue files are incomplete without it. Write to the Factory, Montpelier, Vt., or to our Chicago store, 68 Lake St.



COLBY WRINGER COMPANY.



N. Y. Office, 108 Chambers St., W. H. QUINN, Manager



LANE'S SELF-LOCKING TACKLE BLOCKS,

Anti-Friction Steel Bushings,

Holds the load at any point, and always sure.

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For sale by the Hardware trade.

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POUGHKEEPSIE, N. Y.

WANTED, Your Attention.

DID IT EVER OCCUR TO YOU

That possibly some one might get up an Anti-Dial Combination Lock that was not a failure.
That possibly this lock might be a good thing, after all.
That possibly it might pay to at least send for a catalogue and prices.
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THE CRAIG LOCKS HARDWARE MEN

Can Convince
Will Convince
Have Convinced

That they are good honest locks
worthy of confidence.

We Guarantee Every Lock.

KEYLESS LOCK CO.,

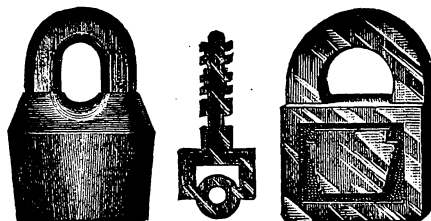
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KEYSTONE LOCK WORKS,

— Established 1879. —

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Patent Inter-Locking Tumbler Scandinavian or Jail PADLOCKS, in 56 grades and sizes. Key and Self-Locking. Brass, Bronze, Steel and Malleable Iron. Red, Black, Bower-Barff and Bright Brown finish. Also a full line of fine flat padlocks in Bronze and Steel. All fully described and illustrated in our new catalogue, furnished free to the trade.

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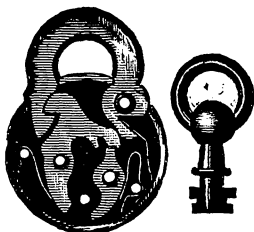
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Eight Tumblers. Key Turning Both Ways.

Sizes; $\frac{1}{4}$ inch to $2\frac{1}{2}$ inches; of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, $\frac{1}{2}$ and $\frac{3}{4}$ inch Padlocks, opened with a common pin, in brass and nickel; for cats and small dogs. The best Railroad Switch and Car Lock in the world. Adopted by the United States Treasury for bonded warehouses.

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Has been the standard for five years.

Write for our new catalogue of Hardware Specialties.

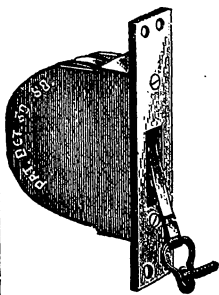
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CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

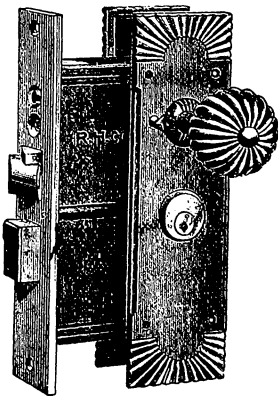
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"VASSAR" LOCKS is that
they are the BEST and
SAFEST cylinder
locks made.

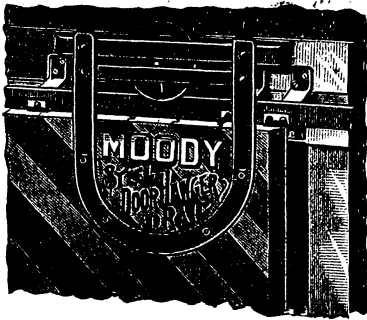
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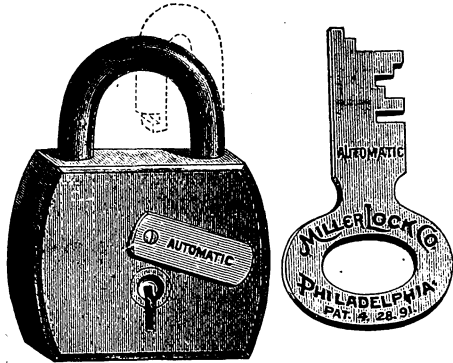


Showing one-half set of hangers attached to door.



The Only Bracing Bracket Made.

HANGERS.	PRICE-LIST.	Per Doz. prs.
No. 5, to run 6 feet, $3\frac{1}{4}$ in. wheel,	-	\$10.00
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No. 7, to run 15 feet, $5\frac{1}{4}$ in. wheel,	-	22.00
RAIL, per foot.....		6 $\frac{1}{2}$ cents



No Padlock ever struck the American Market so favorably as the

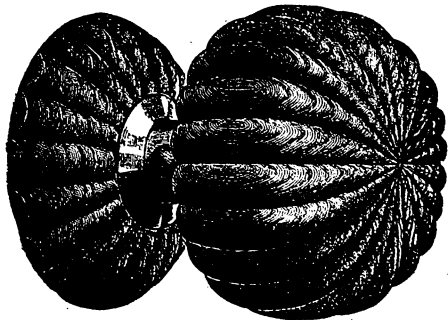
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They are novel and durable, and have tenfold more changes of key than are usual in locks at the price.

	Per Doz
No. 406—Steel, Dark Finish, 2-Keyed,	\$7.20
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DOOR SPRINGS AND CHECKS
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NEW GOODS. NEW PRICES.
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"CONROY"
Refrigerator Door
Fasteners

Have rapidly supplanted all others
Refrigerator Trimmings

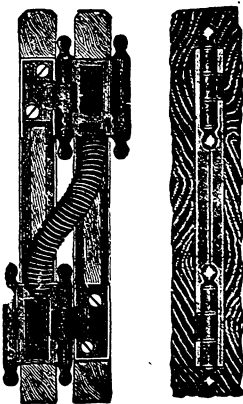
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Chicago Spring Butts



MANUFACTURED BY
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DOORS.	1	21	31	41	51
	Jap'd Pair.	Nickel Plated Pair.	Bronze Plated Pair.	Real Bronze Pair.	Polished Brass Pair.
$\frac{3}{4}$ to 1 in.	\$1.20	\$3.00	\$3.00	\$7.25	\$7.25
1 to $1\frac{1}{4}$ in.	1.50	3.75	3.75	8.00	8.00
$1\frac{1}{4}$ to $1\frac{3}{4}$ in.	2.50	5.50	5.50	10.75	10.75
$1\frac{3}{4}$ to 2 in.	4.00	7.50	7.50	18.00	18.00
2 to $2\frac{1}{4}$ in.	7.00	10.00	10.00	27.00	27.00
$2\frac{1}{4}$ to $3\frac{1}{4}$ in.	10.00	14.00	14.00	36.00	36.00

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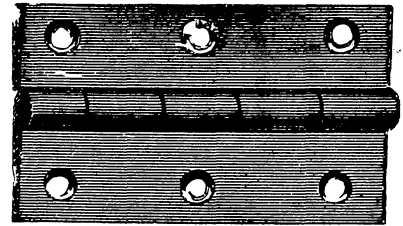
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Our Combination

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Lock and
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Holds door in any position

For sale by all Jobbers. Write for Circulars.

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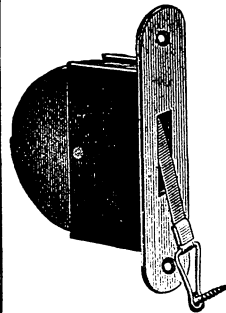
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Indispensable in Building Pullman Steel Frame Sash Balance.



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- 3d. Cost less money than weights and cord.
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- 5th. Warranted 10 years.

Write us for Catalogue, or any special information and don't get our Balance confused with others of inferior makes.

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The Best and most Practical substitute for weights invented. The most Durable, the Cheapest and best device for all ordinary windows. Balances when in position are out of sight. No rivets, bolts or screws are used in putting it together, so that nothing can get out of order or need repairing. No cutting, boring or marring the sash, as the Balances are let into the jamb.

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Ratchet Wrenches.

Made of best forged Tool Steel; are easily and readily adjusted and controlled. Can be made reversible instantly without removing from their work by throwing over the lever in slot of the handle.


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for drill shank and feed nut. The jaws on this wrench open from $\frac{3}{16}$ to $1\frac{1}{4}$ inches.

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FROST'S ANTI-RATTLE
 Pat. Jan. 20, 1880.
Out One-half Size.
 Sample pair sent to any hardware or saddlery firm by addressing
The Frost Thill Spring Co.
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THE WILCOX & HOWE COMPANY,
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 MANUFACTURERS OF
A Full Line of Carriage Hardware
ALSO SPECIAL FORGINGS.
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IDEAL SASH PULLEY.



A 4-Hole Auger Mortise Cone Axle Pulley. Applied without chisel or Screws Each Pulley its own marking gauge. A variety of Styles and Sizes to Select from. Ask for Catalogue of Hardware Specialties
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Motley's Adjustable Sash Holder



Patented Dec. 13, 1892.
For Windows, New or Old,
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Will mark in ten minutes what would take five hours to do the old way, saving the price of it the first time used.

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Saves 2 cents a window in cost of material, saves time in putting on and makes a neater job than tying knots. Send for circulars and prices

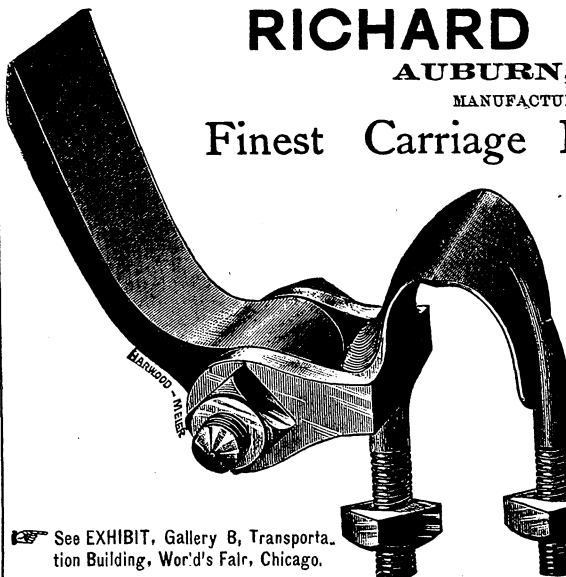
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 See EXHIBIT, Gallery B, Transportation Building, World's Fair, Chicago.
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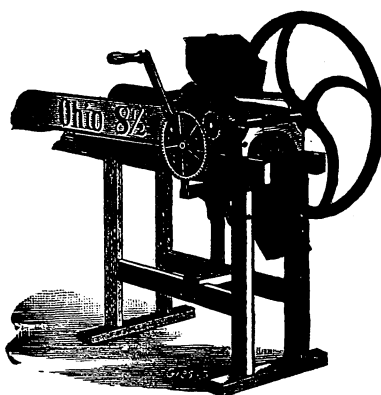
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ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable

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NOW IS THE TIME TO PLACE YOUR ORDERS FOR HAY BLOCKS.

Our Self-Oiling Blocks

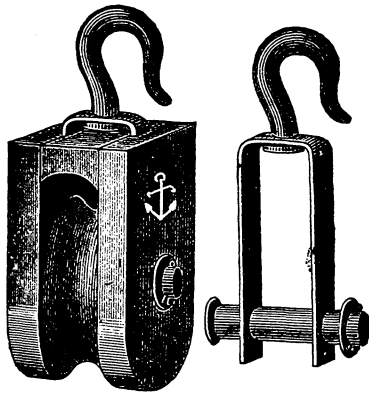
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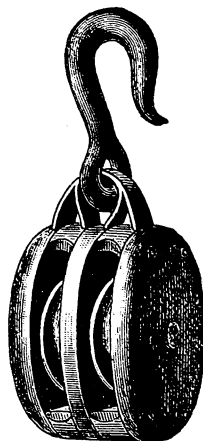
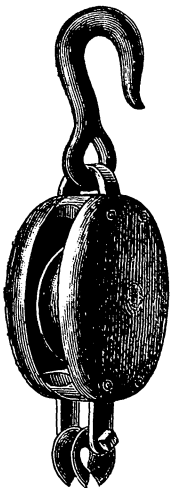


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WILL PROVE SATISFACTORY

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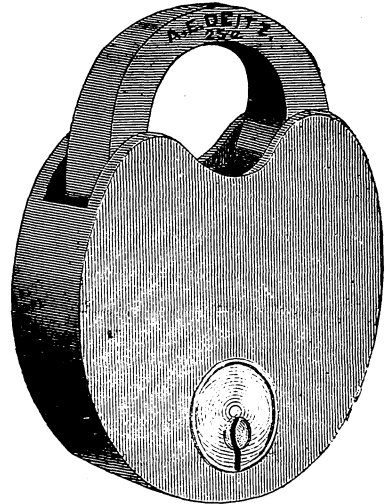
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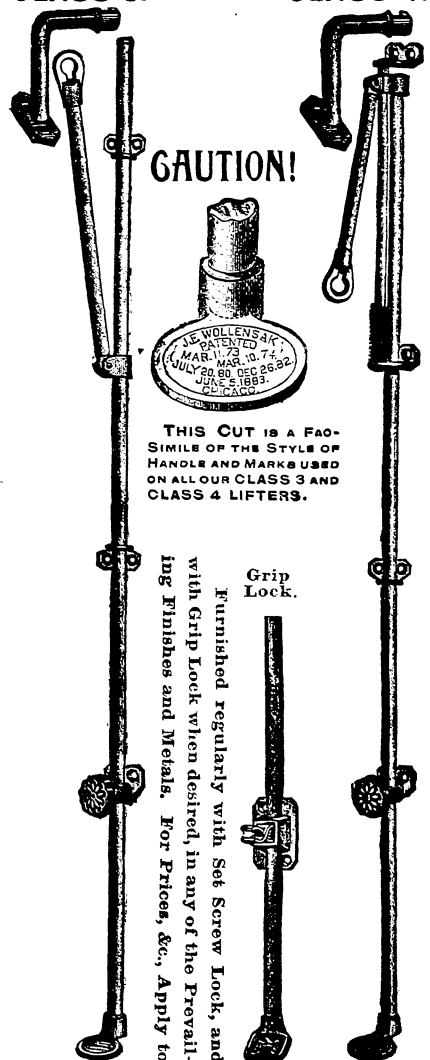
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OLD RELIABLE

J. F. WOLLENSAK'S PATENT.

CLASS 3.

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CAUTION!

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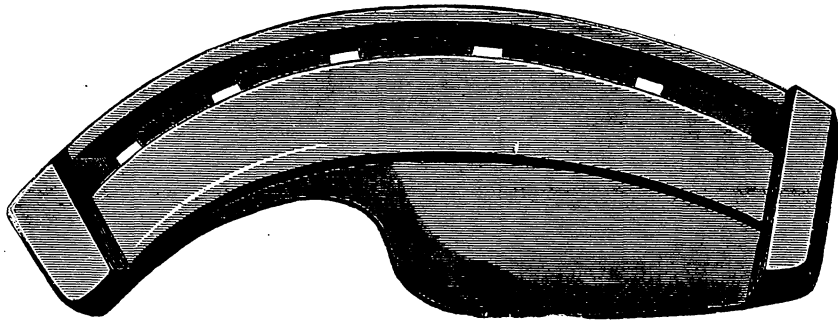
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Made under Deebie's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.

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Blunt Calk. Seven Sizes.

Warranted
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MANUFACTURE THE LARGEST VARIETY OF

FORGED CARRIAGE IRONS

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Beautiful Shape.

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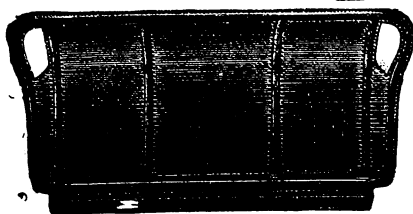
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FINE QUALITY

DASHES

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FENDERS,



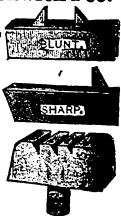
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SURREY DASH.

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AXLEINE



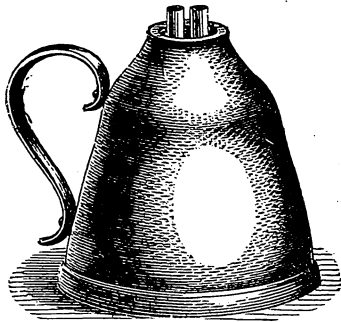
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Send for sample and prices.

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OF
Malleable Iron.
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SCREW, KEROSENE SIZE.

Hammer's Adjustable Clamps.
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Hammer's M. I. Hanging Lamps.
NEW pattern Heavy Screw Clamp
strongest in the Market.

For sale by all the principal Hardware Dealers.

Send for Price List.

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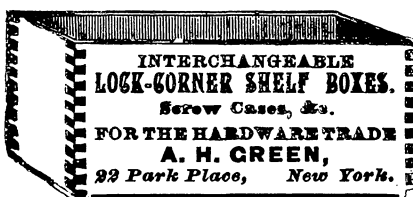
Of superior quality, and Hardware Specialties
in Malleable Iron made to order.

HAMMER & CO.
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HOWARD IRON WORKS
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Manufacturers of

BENCH VISES

Price Lists sent on application

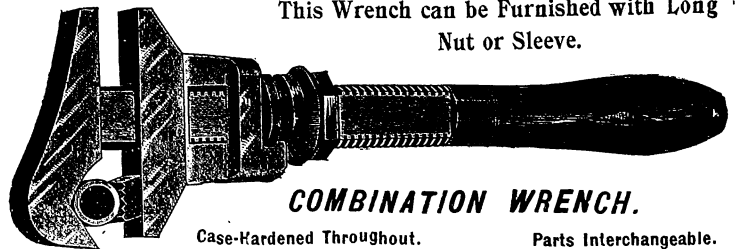


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The Handiest, Cheapest and
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Highest testimonials from those in
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BERGER BROS.,

237 Arch St., Philadelphia, Pa.



This Wrench can be furnished with Long
Nut or Sleeve.

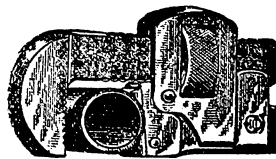
COMBINATION WRENCH.

Case-Hardened Throughout.

Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the
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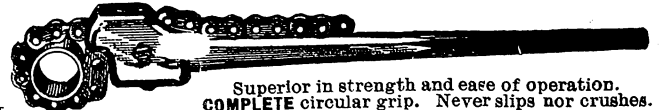
Forged Steel.

All parts interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no
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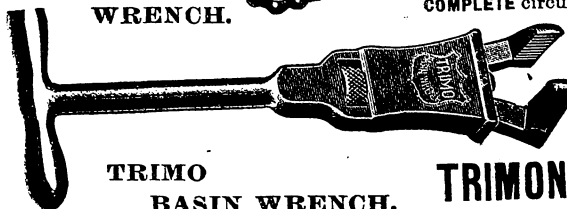
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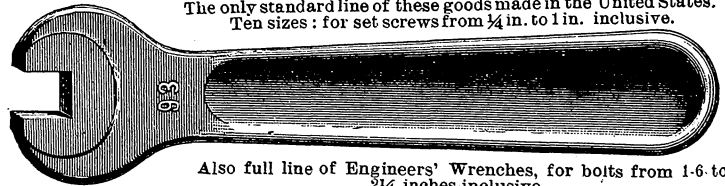


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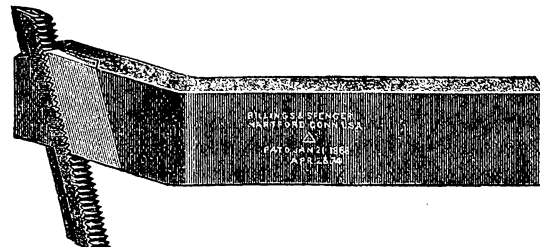
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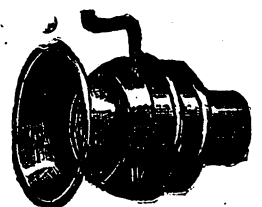
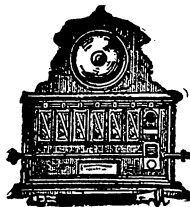
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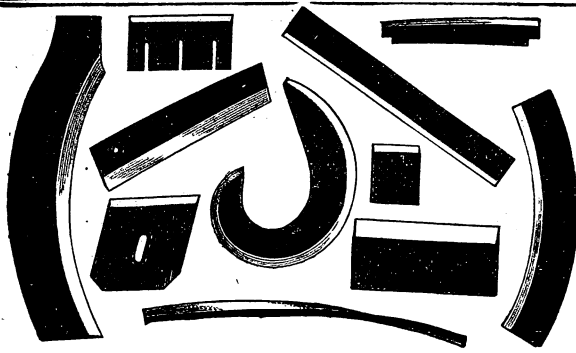
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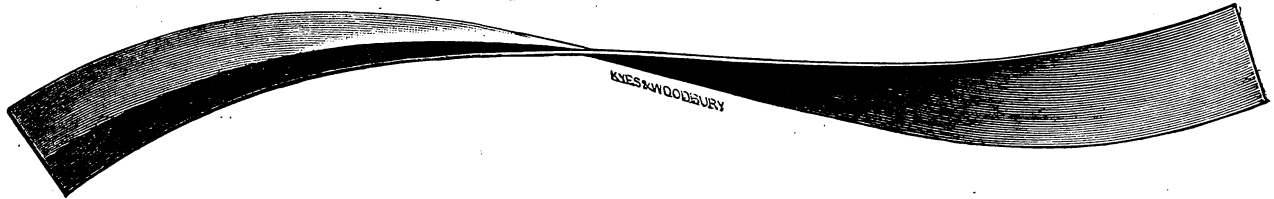
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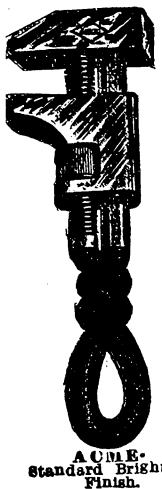
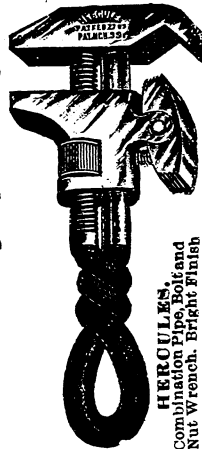
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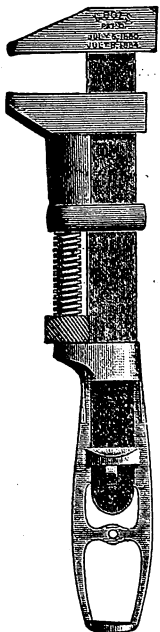
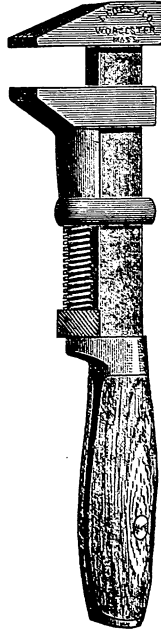
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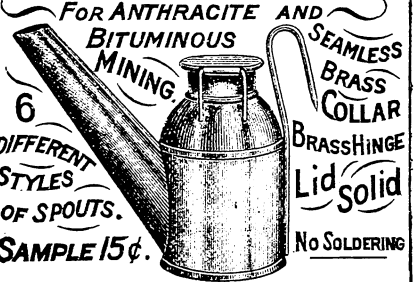
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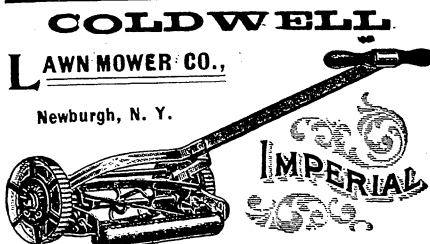
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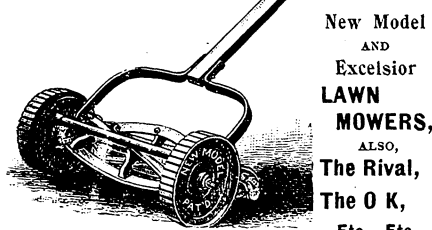
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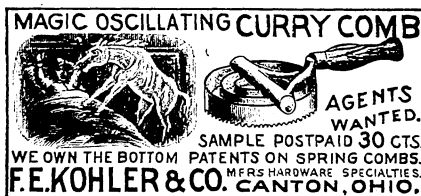
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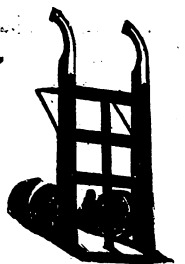
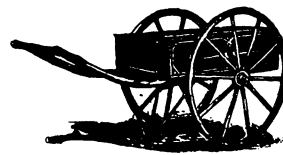
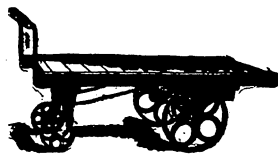
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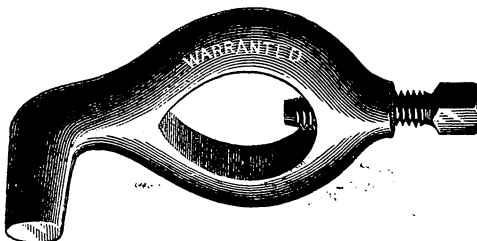
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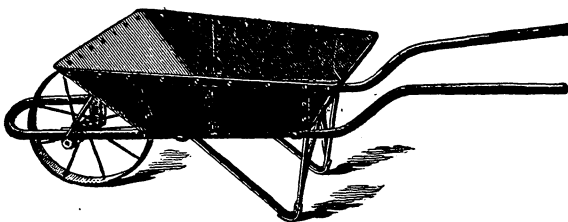
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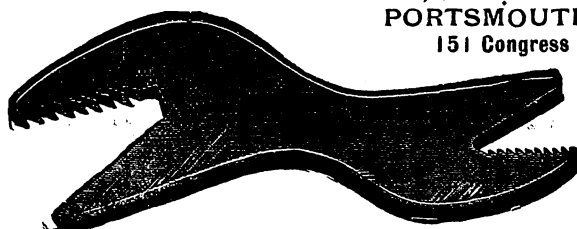
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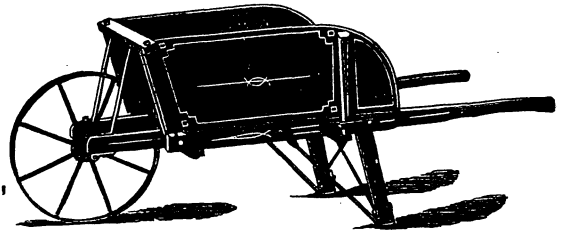
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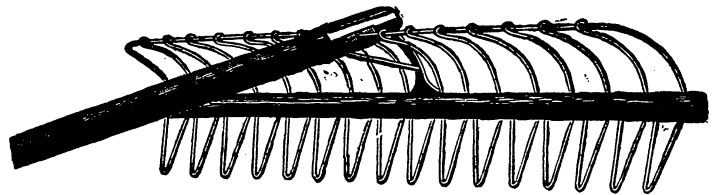
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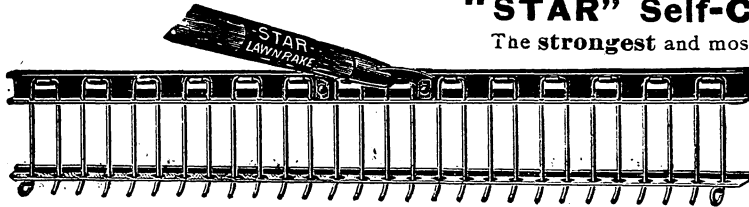
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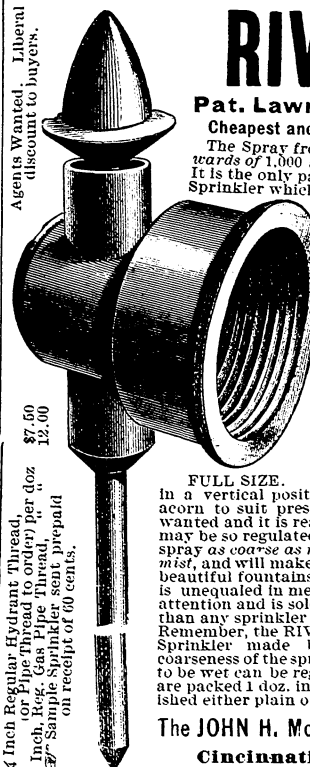
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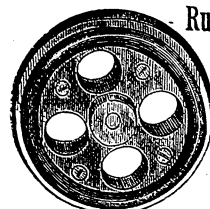
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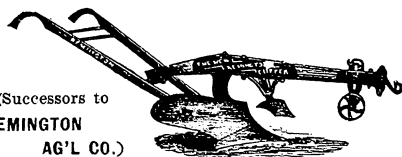
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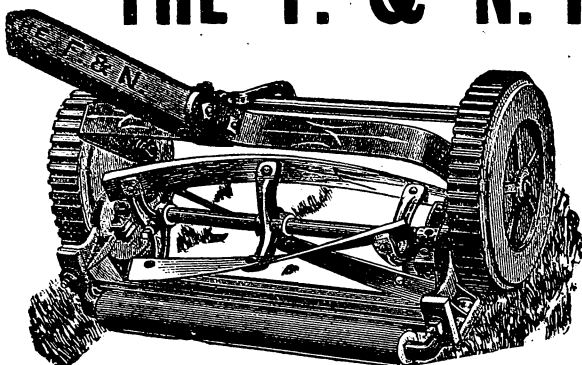
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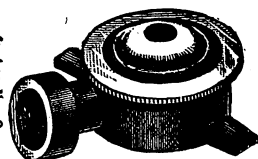
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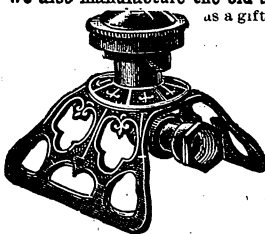


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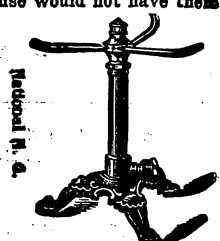


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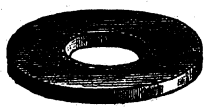
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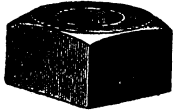
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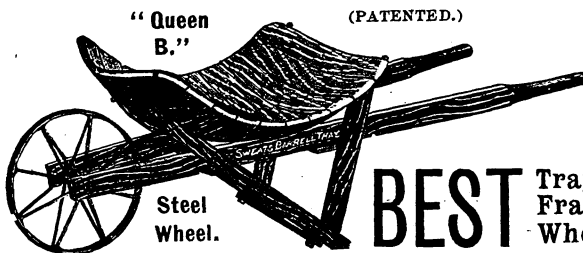
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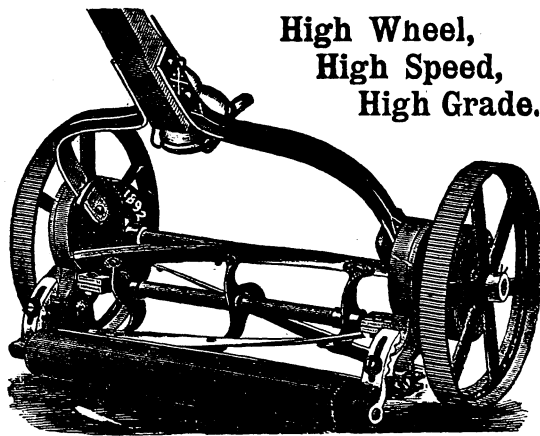
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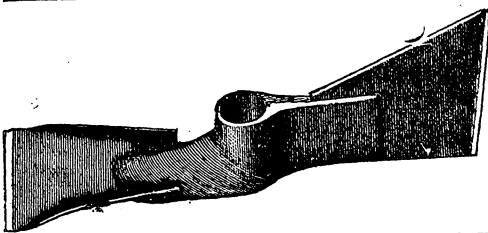
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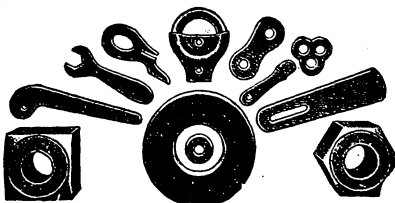
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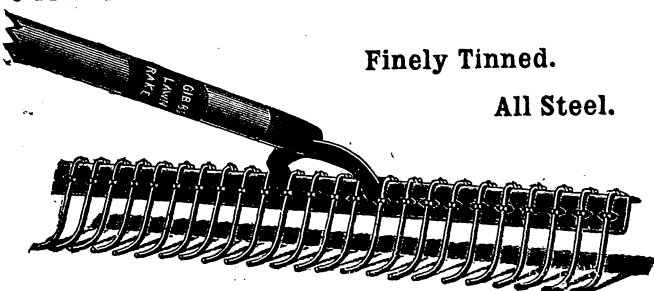
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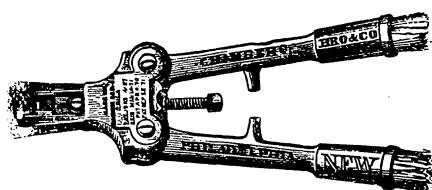
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Sweester, W. A., Brockton, Mass.

Expansion Belts.
Boone, W. C. & Son, Brooklyn, N. Y.
Church, Isaac, Toledo, O.

Faucets, Self-Measuring.
Lane Bros., Poughkeepsie, N. Y.

Faucets. Wooden. Makers of.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harrison Safety Boiler Wks., Phila., Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Phila., Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing. Iron and Wire.
Sarnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
DeKalb Fence Co., DeKalb, Ill.

Gilbert & Bennett Mfg. Co., 42 Cliff St., Hartman Mfg. Co., Beaver Falls, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire Works Co., Milwaukee, Wis.

Files, Importers of.
Moss, F. W., 80 John, N. Y.

Files and Rasps. Manufacturers of.
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
Butcher, W. & S., 135 Duane St., N. Y.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.

Fire Brick. Makers of.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer R. & Sons, Foot E. Houston, St. McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbury Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro., Woodbridge, N. Y.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dane, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flue Cleaners.
Mackey, Jas. T. St. Louis, Mo.

Fly Fans.
Matthal, Ingram & Co., Baltimore, Md.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Forges, Portable, &c.
Bradley & Co., Syracuse, N. Y.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansing, Mich.
Foss Mfg. Co., Springfield, Ohio.
Sturtevant, B. & Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.
Chicago Fdy. Supply Co., Chicago, Ill.
MacKellar Foundry Facing & Supply Co., Quincy, Ill.
Paxson, J. W. & Co., Phila., Pa.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.
Whitehead Bros. Co., 617 W. 15th St., Chicago, Ill.

Foundry Middle.
Estey, W. S., 65 Fulton, N. Y.

Foundry Supplies.
Chicago Fdy. Supply Co., Chicago, Ill.
Colliau, Victor, Detroit, Mich.
MacKellar Fdy. Facing & Supply Co., Quincy, Ill.
S. Obermayer Co., Cincinnati, O.
Paxson, J. W. & Co., Philadelphia, Pa.
Smith, J. D. Fdy. Supply Co., Cinn., O.
Whitehead Bros. Co., 617 W. 15th St., Chicago, Ill.

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Fruit Presses.
Enterprise Mfg. Co., Philadelphia, Pa.

Fuel Burners.
Collins, W. S., 45 Drexel Bldg., N. Y.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Garden Tools.
Noyes, B. B. & Co., Greenfield, Mass.

Gas Producers.
Wood, R. D. & Co., Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast & Maule, Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
T. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
New Process Raw Hide Co., Syracuse, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Union Fdy. & Mch. Co., Pittsburgh, Pa.

Glass Boards.
Canton Saw Co., Canton, O.

Glass Tubes.
Ashcroft Mfg. Co., 111 Liberty St., N. Y.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russell Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co., Phila., Pa.

Grinding and Polishing Machines.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grinding Mills.
Foss Mfg. Co., Springfield, O.

Grindstone Dressing Machinery.
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.
Huron Grindstone Co., Port Austin, Mich.

Gunpowder, Makers of.
Lafin & Rand Powder Co., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Halter Chains.
Keller & Woolworth, Niagara Falls, N. Y.

Handles.
New Process Raw Hide Co., Syracuse, N. Y.
New York Mallet and Handle Wks., 458 E. Houston St., N. Y.

Hangers. Door.
Chicago Spring Butt Co., Chicago, Ill.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doshier, Martin, 88 Chambers, N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Graham, John H. & Co., 113 Chambers, Hussey, E. J. & Co., 80 John St., N. Y.
McCoy, J. F. Co., 26 Warren St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
Underhill, Clinch & Co., 94 Chambers St., N. Y.

Hardware Specialties.
Aome Shear Co., Bridgeport, Conn.
Belden Machine Co., New Haven, Conn.
Empire Portable Forge Co., Lansing, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Hart, H. C. Mfg. Co., Detroit, Mich.
Henn, A. J. & Co., New Haven, Conn.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa.
Peabody & Parks, Troy, N. Y.
Welland, Chas., 143 Chambers St., N. Y.
Wilson, J. Fred, Worcester, Mass.
Wire Goods Co., Worcester, Mass.
Underhill, Clinch & Co., 94 Chambers Street, N. Y.

Hardware. Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Holt, Hiram Co., E. Wilton, Me.

Hods.
Blutenbender & Co., Scranton, Pa.

Holding Machines.
Jox, Alfred & Co., 314 Green, Phila.
Jrow & Holsting & Conveying Mch. Co., Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E. & Son, Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia, Pa.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.

Hollow-Ware.
Bronson Supply Co., Cleveland, Ohio.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Spedel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.

Hollowware, Aluminum.
Illinois Pure Aluminum Co., Lemont, Ill.

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, Makers of.
National Horse Nail Co., Vergennes, Vt.

Horse Shoes, Makers of.
Bryden Horse Shoe Co., Catsasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence, R. I.
Sandford Horse Shoe Co., Boston, Mass.
The Burden Iron Co., Troy, N. Y.

Hose.
Cleveland Rubber Co., Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 16 Park Row, N. Y.

Hose Menders.
Hudson, C. E. & Co., Leominster, Mass.

Hotels.
The Audubon, Chicago, Ill.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Shavers.
Enterprise Mfg. Co., Philadelphia, Pa.

Injectors.
Jenkins Bros., New York

Insurance. Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Levin, Henry & Co., Philadelphia.
Keesley, Jerome & Co., Philadelphia.
Lee, J. Tammall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Munn, E. R. & Co., Philadelphia.
Pilling & Orange, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron. Merchants.
Barnes, C. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussentut & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Bradley & Co., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co., 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 86 Elm St., N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pierion & Co., 29 Broadway, N. Y.
Richards, D. W. & Co., 88 Montgomery St., N. Y.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, S. H. & Co., Philadelphia.

Iron, Importers.
Abbott, Jere & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. Manufacturers of.
Cambridge Iron & Steel Co., Cambridge, Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladders.
Davies, Chas. & Co., Williamsport, Pa.

Ladies.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lamps.
Standard Lighting Co., Cleveland, O.

Lanterns.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Bradford Mill Co., Cincinnati, Ohio.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia.
Sebastian, May & Co., Sidney, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mattocks.
Railway Speed Recorder Co., Kent, O.

Lawn Mowers.
Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Lape, W. E., Syracuse, N. Y.
Mast, Foss & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila., Pa.

Lawn Rakes.
Gibbs Mfg. Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse, N. Y.

Lawn Sprinklers.
Blair Mfg. Co., Springfield, Mass.
Ette & Henger Mfg. Co., St. Louis.
McGowan, John H. Co., Cincinnati, O.

Lawn Sweepers.
Lape, W. E., Syracuse, N. Y.

Lawn Swings.
Davies, Chas. & Co., Williamsport, Pa.

Lemon Squeezers.
Ripley Mfg. Co., Unionville, Conn.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
D'vils & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Limestone.
Jefferson County Mining & Quarrying Co., Birmingham, Ala.

Locks & Knobs. Manufacturers of.
Delta, A. E., 97 Chambers, N. Y.
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Sargent & Co., 37 Chambers St., N. Y.
Smith & Egge Mfg. Co., Bridgeport, Yale & Towne Mfg. Co., Stamford, Conn.

Lubricators.
Wadham's Oil & Grease Co., Milwaukee, Wis.

Machinery.

Am. Tool Works, Cleveland, Ohio.
 Barnes, W. F. & John, Rockford, Ill.
 Becker, Jno. Mfg. Co., Fitchburg, Mass.
 Bement, Miles & Co., Philadelphia, Pa.
 Bigelow, C. B., 45 Dey, N. Y.
 Bignall & Keeler Mfg. Co., St. Louis.
 Birmingham Iron Foundry, Burnside ham, Conn.
 Bliss, E. W. Co., Brooklyn, N. Y.
 Bogert, Jno. L., Flushing, N. Y.
 Bradford Mill Co., Cincinnati, Ohio
 Briggs, Marvin, 12 Broadway, N. Y.
 Brown & Sharpe Mfg. Co., Providence, R. I.
 Carlin's Sons, Thos., Allegheny, Pa.
 Cinn. Milling Mch. Co., Cincinnati, Ohio.
 Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
 Coulter & McKensie Mch. Co., Bridgeport, Conn.
 Crutshank, D. B., Providence, R. I.
 Detrick & Harvey Mch. Co., Baltimore, Md.
 Ehrhardt, Gustave & Sons, Pittsburgh, Pa.
 Fitchburg Mch. Works, Fitchburg, Mass.
 Garvin Mch. Co., Laight & Canal Sts.
 Gould & Eberhardt, Newark, N. J.
 Hamilton Mch. Tool Co., Hamilton, O.
 Harrington, E. Son & Co., Phila. Pa.
 Hendey Machine Co., Torrington, Ct.
 Hill, Clarke & Co., Boston, Mass.
 Ingersoll Milling Machine Co., Rockford, Ill.
 Johnson, Israel H., Jr., & Co., Phila.
 Jones & Lamson Mch. Co., Springfield, Vt.
 Kelly, Daniel, Phila., Pa.
 Lodge & Davis mch. Tool Co., Cincinnati, O.
 Lodge & Shipley Mch. Tool Works, Cincinnati, O.
 Lovegrove & Co., Philadelphia, Pa.
 McCabe, J. J., 68 Cortlandt, N. Y.
 Machinists Supply Co., Rochester, N. Y.
 Manville, E. J. Mch. Co., Waterbury, Conn.
 Norton Mfg. Co., Muskegon Heights, Mich.
 Newark Mch. Tool Works, Newark, N. J.
 New Haven Mfg. Co., New Haven, Conn.
 New York Mach'ry Depot, N. Y.
 Niles Tool Wks., 138 Liberty St., N. Y.
 Pedrick & Ayer, Philadelphia, Pa.
 Pittsburgh Mfg. Co., Pittsburgh, Pa.
 Place, Geo., 12 Broadway, N. Y.
 Poole, Robert & Son Co., Baltimore, Md.
 Powell Planer Co., Worcester, Mass.
 Pratt & Whitney Co., Hartford, Conn.
 Prentiss Tool & Supply Co., N. Y.
 Soranton Supply & Mch'ry Co., Soranton, Pa.
 Sellers, Wm. & Co., Phila.
 Seyfert's Sons L. F., Philadelphia, Pa.
 Steptoe, J. & Co., Cincinnati, O.
 Stow Flexible Shaft Co., Ltd., Phila.
 Toomey, Frank, Philadelphia, Pa.
 Wetherill, Robert & Co., Chester, Pa.
 Wilson, W. A., Rochester, N. Y.
 Woodruff Mfg. Co., Hartford, Conn.

Machinery for Hardware Manufacturers.
 Add. Jno. & Son, New Haven, Conn.

Machine Knives.
 Loring Coes & Co., Worcester, Mass.
 Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—See machinery.

Machine Work.
 Angus, C. H., Albany, N. Y.
 Papping, J., 58th St., & 11th Ave., N. Y. City.

Machinists' Scales.
 Coffin & Leighton, Syracuse, N. Y.
 Sturtevant, L. S., Athol, Mass.

Machinists' Tools and Supplies.
 Brown & Sharpe Mfg. Co., Providence
 King, J. M. & Co., Watford, N. Y.
 Sellers, Wm. & Co., Inc., Phila.

Mallets.
 N. Y. Mallet & Handle Works, N. Y.

Manufacturing Sites.
 Kokomo Enterprise Co., Kokomo, Ind.

Measuring Tapes.
 Lufkin Rule Co., Saginaw, Mich.

Meat Cutters.
 Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Drawing.
 Correspondence School of Mechanics, Scranton, Pa.

Metals.
 Fearing, Wm. S., 100 Chambers, N. Y.
 Hendricks Bros., 49 Cliff, N. Y.
 Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
 American Metal Co., N. Y.

Metallograders.
 Britton, J. Blodgett, Phila.

Metal Saws.
 Ehrhardt, Gustave & Sons, Pittsburgh
 Q & C Co., Chicago, Ill.

Milling Machines.
 Brown & Sharpe, Providence, R. I.
 Cinn. Milling Mch. Co., Cincinnati, Ohio.
 Ingersoll Milling Machine Co., Rockford, Ill.
 Pedrick & Ayer, Phila. Pa.

Mining Knives.
 Palmer Edw. Mfg. Co., Troy, N. Y.

Mine Lamps.
 Darby, Edw. & Sons, Phila. Pa.
 Leonard, E. E., Scranton, Pa.
 Leonard, T. F., Scranton, Pa.

Mining Screens.
 Harrington & King Perforating Co., Chicago, Ill.
 Howard & Morse, 45 Fulton, N. Y.

Model Work.
 Hurley Bros., Hartford, Conn.

Molding Sand.
 Chicago Foundry Supply Co., Chicago, Ill.
 Obermayer, S. Co., Cincinnati, O.
 Paxson, J. W. & Co., Phila.
 Whitehead Bros. Co., 617 W. 15th St., N. Y.

Motors, Water and Electric.
 C. & O. Electric Motor Co., 402 and 404 Greenwich St., N. Y.
 Dallett, Thos. H. & Co., Phila., Pa.
 Thomson, Houston Motor Co., Boston, Mass.

Nail Machinery.
 Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
 Borden & Lovell, 70 West, N. Y.
 Cumberland Nail & Iron Co., Phila.
 Oxford Iron Co., 81 Washington, W.
 Pottstown Iron Co., Pottstown, Pa.
 Riverside Iron Wks., Wheeling, W. Va.

Nickel Platers' Supplies.
 Eddy Electric Mfg. Co., Windsor, Conn.
 Zucker & Levert, Chemical Company, 10 to 14 Grand St., N. Y.

Nerway Shapes, Rollers of.
 Bowland, William & Harvey, Frankford, Philadelphia

Nut Machines.
 Dunham Nut Mch. Co., Unionville, Ct.

Nuts, Bolts, &c., Makers of.
 American Bolt Co., Lowell, Mass.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Haskell, Wm. H. Co., Pawtucket, R. I.
 Mt. Carmel Bolt Co., Mt. Carmel, Conn.
 Port Chester Bolt and Nut Co., Chester, N. Y.
 Russell, Burdall & Ward, Port Chester
 Sternbergh, J. H. & Son, Reading, Pa.
 Wilson, J. Fred., Worcester, Mass.
 Wm. H. Haskell Co., Pawtucket, R. I.

Oil Stones.
 Pike Mfr. Co., Pike Station, N. H.

Oil Stoves.
 Glazier Stove Co., Chelsea, Mich.
 Henry, J. F. Mfg. Co., Hamden, Conn.

Ores.
 Wister, Francis, Philadelphia, Pa.

ix Shoes.
 Scranton Forging Co., Scranton, Pa.
 Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Packing.
 Billington, Jas. H. & Co., Phila., Pa.
 Morris, Robt., St. Louis, Mo.
 N. Y. Belting & Packing Co. Ltd., N. Y.

Packings.
 Ames Sword Co., Chicopee, Mass.
 Fram, E. T., Lancaster, Pa.
 Hillebrand & Wolf, Phila., Pa.
 Miller Lock Co., Philadelphia, Pa.

Paint.
 Detroit Graphite Mfg. Co., Detroit, Mich.
 Dixon, Jos. Crucible Co., Jersey City, N. J.
 Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.
 Dangler Stove & Mfg. Co., Cleveland, O.

Patent Self-closers.
 Ashley, J. C., Washington, D. C.
 Fitzgerald, S. C., Washington, D. C.
 Bowson & Howson, Phila. & Wash'gton.
 Jenner, H. W. T., Washington, D. C.
 Stocking, E. B., Washington, D. C.

Perforated Metal.
 Clinton Wire Cloth Co., Clinton, Mass.
 Harrington & King Perforating Co., Chicago, Ill.

Phosphor Bronze.
 Phosphor Bronze Smelting Co., Limited, 612 Arch, Philadelphia.

Phosphor Tin.
 Crescent Phosphorized Metal Co., Philadelphia, Pa.
 Crosby Steam Gauge & Valve Co., Boston, Mass.
 Haik & Naumann, 616 Pearl, N. Y.

Picks and Mattocks.
 Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
 Houston, C. B. & Co., Philadelphia, Pa.
 Mann, Edwin R., Philadelphia, Pa.
 Montour Iron & Steel Co., Danville, Pa.
 Naylor & Co., 45 Wall, N. Y.
 Pickands, Brown & Co., Chicago, Ill.
 Pilling & Crane, Philadelphia, Pa.
 Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
 Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

File Drivers.
 Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
 National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
 Bignall & Keeler Mfg. Co., St. Louis, Mo.
 Merrill Mfg. Co., Toledo, O.
 Pannocast & Maule, Philadelphia.
 Saunders Sons, D., Yonkers, N. Y.

Pipes, Fittings, &c., Makers of.
 McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas. Makers of.
 Cumberland Nail & Iron Co., Phila. Pa.
 Donaldson Iron Co., Emmaus, Pa.
 Riverside Iron Works, Wheeling, W. Va.

Plane Irons, Manufacturers of.
 Buck Bros., Millbury, Mass.

Planes, Manufacturers of.
 Stanley Rule & Level Co., N. Y.

Plate Bending Rolls.
 Schneekloth, H. A., 530 W. 28th St., N. Y.

Plate, Iron and Steel, Mfrs of.
 Etna-Standard Iron & Steel Co., Bridgeport, O.
 Lukens Iron & Steel Co., Coatesville, Pa.
 Moorhead-McLean Co., Pittsburgh, Pa.
 McVain & Sons, Reading, Pa.
 Pottstown Iron Co., Pottstown, Pa.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Singer, Nimitz & Co., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
 Wellman Iron & Steel Co., Thurlow, Pa.
 Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
 Angus, C. H., Albany, N. Y.
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Plumbago.
 Chicago Fdy. Supply Co., Chicago, Ill.

Plows.
 Ross, A. M. & Co., Illon, N. Y.

Pokers and Lifters.
 Troy Nickel Works, Troy, N. Y.

Polishing Machines.
 Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
 La Massena, C. E. & Co., Newark, N. J.

Post Hole Diggers.
 Gibbs Mfg. Co., Canton, Ohio.
 Graham, John H. & Co., 113 Chambers St., New York.
 Kohler, F. E. & Co., Canton, O.
 Wister, L. E. & Co., Philadelphia, Pa.

Poultry Nettings.
 Barnum, E. T., Detroit, Mich.
 Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
 N. Y. Wire Cloth Co., Trenton, N. J.
 "Silver Finish."
 Tyler Wire Wks. Co., W. S., Cleveland, O.
 Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
 Ladin & Rand Powder Co., 29 Murray New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.
 Millers Falls Co., 93 Reade St., N. Y.
 Stover Novelty Wks., Freeport, Ill.

Power Hammers.
 Bradley & Co., Syracuse, N. Y.
 Belden Mach. Co., New Haven, Conn.
 Dienselt & Eisenhardt, Philadelphia.
 Dupont Mfg. Co., St. Johnsbury, Vt.
 Jenkins & Lingie, Bellefonte, Pa.

Presses, Dies, &c.
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Waterbury Mch. Co., Waterbury, Conn.

Presses, Power, Makers of.
 Bliss, E. W. Co., Brooklyn, N. Y.
 Eaton, Geo. H. & Co., Boston, Mass.
 Maxville, E. J., Mich. Co., Waterbury, Ct.
 Merritt, A. H., Madison.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
 Keystone Clutch & Mch. Wks., Phila., Pa.

Pulverizing Mill.
 Bradley Fertilizer Co., Boston, Mass.

Pumping Machinery.
 Dees Bros. Steam Pump Works, Indianapolis, Ind.
 Goulds Mfg. Co., Seneca Falls, N. Y.
 Hooker-Colville Steam Pump Co., Chicago, Ill.
 McGowan, J. H. & Co., Cincinnati, O.
 Maslin, J. & Son, Jersey City, N. J.
 Newark Iron Wks. Co., So. Norwalk, Conn.
 Southward Fdy. & Mch. Co., Phila., Pa.
 Valley Pump Wks. Easthampton Mass.
 Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, Makers of.
 Bellevue Pump Co., Bellevue, Iowa.
 Deming Co., Salem, O.
 Douglas, W. & B., Middletown, Conn.
 Mast, Foss & Co., Springfield, O.
 Myers, F. E. & Bro., Ashland, O.
 St. Joseph Pump Co., St. Joseph, Mo.

Punches and Shears, Hand and Power.
 E. W. Bliss Co., Brooklyn, N. Y.
 Cleveland Bdw. Co., Cleveland, O.
 Cockburn Barrow & Mch. Co., Jersey City, N. J.
 Crosby, G. A. & Co., Chicago, Ill.
 Eaton, Geo. H. & Co., Boston, Mass.
 New Doty Mfg. Co., Jaunesville, Wis.
 Schneekloth, H. A., 530 W. 28th St., N. Y.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Wais & Roos, Punch & Shear Co., Cincinnati, Ohio.
 Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
 Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
 Hirth, L. K., Chicago, Ill.
 Perry, W. H. & Co., Providence, R. I.
 Richards, J. B. & Co., Pittsburgh, Pa.

Railway Supplies.
 Scully Steel & Iron Co., Chicago, Ill.

Rat and Mouse Traps.
 Burditt & Williams, Boston, Mass.
 Estey, W. S., 65 Fulton, N. Y.
 Ripley Mfg. Co., Unionville, Conn.

Razors.
 Butler, W. & S., 135 Duane St., N. Y.
 Curley, J. & Bro., 6 Warren St., N. Y.
 Electric Cutlery Co., 113 Chambers, N. Y.
 Schmitz, E. Lothar, 92 Reade St., N. Y.
 J. R. Torrey Razor Co., Worcester, Mass.

Refrigerator Door Fasteners.
 Conroy, P. J. & Co., Philadelphia.

Rivets.
 Johnson, Waterbury, Conn.
 Burden Iron Co., Tr y, N. Y.
 Cobb & Drew, Plymouth, Mass.
 Henderson, Jas. S., 165 Greenwich, N. Y.
 Plymouth Mills, Plymouth, Mass.
 Sternbergh, J. H. & Son, Reading, Pa.
 Townsend, W. F. & Co., New Brighton, Pa.

Riveting Machines.
 Add. Jno. & Sons, New Haven, Conn.

Roasters & Bakers.
 Matthal, Ingram & Co., Baltimore, Md.

Rock Drills.
 Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
 Rand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery.
 Birmingham Iron Fdry, Birmingham, Conn.
 Booth, The Lloyd, Co., Youngstown, O.
 Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
 Mahoning Fdry & Mch. Co., Danville, Pa.
 Morgan Construction Co., Worcester, Mass.
 Robinson-Rea Mfg. Co., Pittsburgh.
 Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
 Trethewey Mfg. Co., Pittsburgh, Pa.
 Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
 Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
 Booth, The Lloyd, Co., Youngstown, O.
 Chicago Foundry Co., Chicago, Ill.
 Garrison, A. Fdry. Co., Pittsburgh, Pa.
 Johnson Foundry Co., Johnstown, Pa.
 Seaman, Sleeth & Black, Pittsburgh.
 Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.

Roofing.
 Berlin Iron Bridge Co., E. Berlin, Conn.
 Boston Bridge Works, Boston, Mass.
 Cambridge Roofing Co., Cambridge, O.
 Cincinnati Corrugating Co., Piqua, O.
 Johns, H. W. Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
 Covert Mfg. Co., West Troy, N. Y.
 Covert's Saddlery Wks., Farmer, N. Y.

Rope Wheels.
 Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
 Canfield, H. O., Bridgeport, Conn.

Rules, Manufacturers of.
 Lufkin Rule Co., Saginaw, Mich.
 Standard Tool Co., Athol, Mass.
 Stanley Rule & Level Co., 29 Chambers.

Sad Irons.
 Universal Sad Iron Co., Milwaukee, Wis.

Sand Paper.
 Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
 Caldwell Mfg. Co., Rochester, N. Y.
 Pullman Sash Balance Co., Rochester, N. Y.
 Stewart & Baker, Rochester, N. Y.
 Vanderbilt Sash Balance Co., Cananaguis, N. Y.

Sash Cords and Chains.
 Morton, Thos., 65 Elizabeth, N. Y.
 Ossawan Mills Co., Norwich, Conn.
 Samson Cordage Works, Boston, Mass.
 Smith & Egge, Mfg. Co., Bridgeport.

Sash Holders.
 Motley, Peter, Philadelphia, Pa.

Sash Locks.
 Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
 Empire Portable Forge Co., Lansingburg, N. Y.
 Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Pulley Marker.
 Skelly J. W. & Son, Bristol, Conn.

Sash Weights.
 Brown, E. E. & Co., Philadelphia, Pa.

Sash Weight Fasteners.
 Skelly, J. W. & Son, Bristol, Conn.

Saws, Makers of.
 Atkins, E. C. & Co., Indianapolis, Ind.
 Disston, Henry & Sons, Phila., Pa.
 Jennings, C. E. & Co., 97 Chambers, N. Y.
 National Saw Co., 98 Reade St., N. Y.
 Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
 Kohler, F. E. & Co., Canton, Ohio.
 Taintor Mfg. Co., 84-86 Chambers, N. Y.

Scales, Manufacturers of.
 Buffalo Scale Co., Buffalo, N. Y.
 Chadillon, John & Sons, 85-89 Cliff, N. Y.

Scrapers, Road.
 Am. Steel Scraper Co., Sidney, Ohio.
 Kilbourne & Jacobs Mfg. Co., Columbus, O.
 Sidney Steel Scraper Co., Sidney, O.

Screens, Door and Window.
 Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
 Wells Bros. & Co., Greenfield, Mass.
 Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
 Brown, R. H. & Co., New Haven, Conn.
 Capitol Mfg. Co., Chicago, Ill.
 Chantrell Tool Co., Reading, Pa.
 Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
 Jarecki Mfg. Co., Erie, Pa.

Screws, Makers of.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Wm. H. Haskell Co., Pawtucket.
 Miles, F. S., 205 Quarry, Philadelphia.
 National Screw & Tack Co., Cleveland, Ohio.
 Reynolds & Co., New Haven, Conn.
 Worcester Machine Screw Co., Worcester, Mass.

Screw Saws.
 Barnes, W. F. & John, Rockford, Ill.
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Seythe Stones and Whetstones.
 Pike Mfg. Co., Pike Station, N. H.
 Cleveland Stone Co., Cleveland, O.
 Huron Grindstone Co., Port Austin, Mich.

Shafting, Makers of.
 Cresson, Geo. V. Co., Philadelphia, Pa.
 Fairmount Mch. Co., Philadelphia, Pa.
 Fitzsimons & Co., Cleveland, Ohio.
 Sellers, Wm. & Co., Inc. Phila. Pa.
 Stow Mfg. Co., Ringhamton, N. Y.

Shaped Iron and Steel, Manufacturers of.
 Etna-Standard Iron & Steel Co., Bridgeport, O.

- Allentown Rolling Mill, Phila.**
Illinois Steel Co., Chicago, Ill.
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville, Pa.
Roberts, A. P. & Co., Phila., Pa.
The Phoenix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.
- Shears and Scissors.**
Acme Shear Co., Bridgeport, Conn.
Reinisch, R. Sons Co., Newark, N. J.
- Sheet Iron and Steel, Manufacturers of.**
Acme-Standard Iron and Steel Co., Bridgeport, Conn.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chase Bros., Pittsburg, Pa.
Moorehead-McCleane Co., Pittsburg, Pa.
Pierson & Co., 29 Broadway, N. Y.
Rely, John W., Fort Hunter P. O., Pa.
Singer, Nimick & Co., Ltd., Pittsburg, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.
- Sheet Metal Work.**
Clark & Cowler, Plainville, Conn.
- Sheet Zinc.**
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
- Shelf Brackets.**
Koch, A. B. & Co., Peoria, Ill.
- Shovels, Spades and Scoops.**
Myers, H. M. Co., Beaver Falls, Pa.
Ross, A. M. & Co., Elion, N. Y.
- Sinks.**
Douglas, W. & B., Middletown, Conn.
- Skates, Ice.**
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
- Skates, Roller.**
Henley, M. C., Richmond, Ind.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
- Skylights.**
Plenty Horticultural & Skylight Wks., 145 Liberty St., N. Y.
- Smelting Works.**
Reeves, Paul S., 760 S. Broad, Phila.
- Speaking Tubes.**
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.
- Specialties, Pat. Articles.**
Konigsow, O., Cleveland, O.
- Speed Indicators.**
Church & Slight, 102 Fulton St., N. Y.
- Spelter.**
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
- Spoons and Forks.**
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
- Sporting Goods.**
Hartley & Graham, 313-315 E'way, N. Y.
- Spring.**
Am. Spiral Spring Co., Pittsburg, Pa.
Cary, Alanson, 240-242 W. 29th St., N. Y.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Nourse, Fred., 166 W. 27th St., N. Y.
Sabin Machine Co., Montpelier, Vt.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
- Spring Hinges.**
Bardsley, J., 149 & 151 Baxter St., N. Y.
Chicago Spring Butt Co., Chicago, Ill.
Putnam Sash Balance Co., Rochester, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.
- Spring Keys and Cotter's.**
Whitman & Barnes Mfg. Co., Syracuse, N. Y.
- Sprinklers.**
Smith, Oliver A., Clarkston, Mich.
- Stamped Ware.**
Am. Stamping Co., 104 & 106 John St., New York
- Stamping Works.**
Avery Stamping Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
- Staples.**
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co., Binghamton, N. Y.
- Steam Gauges.**
Ascherff Mfg. Co., 111 Liberty St., N. Y.
Bristols Mfg. Co., Waterbury, Conn.
- Steam Hammers, &c., Makers of.**
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Tretlow Mfg. Co., Pittsburg, Pa.
- Steam Heating.**
Webster Warren & Co., Phila., Pa.
- Steam Separators.**
Goubert Mfg. Co., 32 Cortland St. N. Y.
Harrison Safety Boiler Wks., Phila., Pa.
- Steel Balls.**
Grant Anti-Friction Ball Co., Fitchburg, Mass.
- Steel, Cold Rolled Strip.**
Willmot & Robbs Mfg. Co., Bridgeport, Conn.
- Steel Figures and Alphabets.**
Erogerud, N. Y., 61 Fulton, N. Y.
- Steel Importers.**
Abbott, Jere & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Mine, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y.
Whitney, A. R. & Co., B'way, N. Y.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Steel (Mushet's Special).**
Jones, B. M. & Co., Boston.
- Steel Manufacturers.**
Acme-Standard Iron & Steel Co., Bridgeport, Conn.
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Herman & Co., 303 Duane St., Buffalo, N. Y.
Carbon Steel Co., Pittsburg, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburg, Pa.
Frankford Steel Co., Philadelphia.
Gaudier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Illinois Steel Co., Chicago, Ill.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
Kayser, William & Co., 303 Duane St., Buffalo, N. Y.
La Belle Steel Co., Pittsburg, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorehead-McCleane Co., Pittsburg, Pa.
Moss, F. W., 88 John, N. Y.
Naylor & Co., 45 Wall, N. Y.
Pennsylvania Steel Co., Steelton, Pa.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rely, J. W., Fort Hunter P. O., Pa.
Rowland, Wm. & Harvey, Frankford, Phila.
Singer, Nimick & Co., Pittsburg, Pa.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co., High Bridge, N. J.
Wordlaw, S. C., Sheffield, Eng.
Wetherell Bros., 93 Liberty, N. Y.
Willmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel, Manufacturers' Agents.**
Barnes, C. K. & Co., Philadelphia, Pa.
Corning, Edw. & Co., 29 E'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.
- Steel Rails, Manufacturers of.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Illinois Steel Co., Chicago, Ill.
La Belle Steel Co., Steelton, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.
- Steel Spiral Springs, Manufacturers.**
Chatillon, John & Sons, N. Y.
Roland, Wm. & Harvey, Frankford, Pa.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Steel, Tool.**
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
La Belle Steel Co., Pittsburg, Pa.
- Step Ladders.**
Cycle Step Ladder Co., Chicago, Ill.
Croissant, M., Albany, N. Y.
- Stocks and Dies.**
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yorkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stove Linings.**
Ostrander Fire Brick Co., Troy, N. Y.
- Stove Pipe Thimbles.**
Cheney, S. & Son, Manlius, N. Y.
- Stove Trimmings.**
Troy Nickel Works, Troy, N. Y.
- Street Lamps.**
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Strops.**
Electric Outlery Co., 113 Chambers, N. Y.
J. R. Torrey & Co., Worcester, Mass.
- Strapping Machines.**
Schultz, E. Lothar, 92 Reade St., N. Y.
- Structural Iron Work.**
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.
- Sulphuric Acid.**
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
- Tacks, Brads, Staples, &c.**
Atlas Tack Corporation, Boston, Mass.
A. Field & Sons, Taunton, Mass.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Naf, Screw & Tack Co., Cleveland, O.
Phillips, E. & Sons, South Hanover, Plymouth Mills, Plymouth, Mass.
Trufant, W. E., Whitman, Mass.
- Taps and Dies.**
Fatterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Testing Laboratories.**
Riehle Bros. Testing Mch. Co., Philadelphia.
- Testing Machines.**
Riehle Bros. Testing Mch. Co., Phila.
- Theoretical Hardware.**
Wollensak, J. F., Chicago, Ill.
- Thill Springs.**
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.
- Time Record.**
Scattergood, H. W., Phila., Pa.
- Tinners' Hardware.**
Berger Bros., Philadelphia, Pa.
- Tin Plate Machinery.**
Lloyd Booth Co., Youngtown, Ohio.
- Tinware.**
Am. Stamping Co., 104 & 106 John St., Matthal, Ingram & Co., Baltimore, Md.
- Tire Upsetters.**
Butts & Ordway, Boston, Mass.
Illinois Iron & Bolt Co., Carpentersville, Ill.
- Toe Calks, Steel.**
Burke, F. F., Boston, Mass.
- Tool Chests.**
Am. Tool Co., 200 W. Houston St., N. Y.
Jennings, C. E. & Co., 97 Chambers St. N. Y.
- Tools.**
Adams, E. C. & Co., Indianapolis, Ind.
Britton, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Chamrell Tool Co., Reading, Pa.
Jennings, C. E. & Co., 97 Chambers, N. Y.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
- Tools, Blacksmith and Wheel.**
Ruffalo Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Illinois Iron & Bolt Co., Carpentersville, Ill.
Plumb, Fayette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Tools, Steam and Gas Fitters'.**
Saunders' Sons, D., Yorkers, N. Y.
- Torches, Oil and Gasolene.**
Danzler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.
- Transom Lifters.**
Wollensak, J. F., Chicago, Ill.
- Trucks, Manufacturers of.**
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass.
and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co., Lansing, Mich.
- Tubes, Seamless Drawn Copper.**
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**
Leag's John S. Son & Co., 4 Fletcher St., New York.
- Tumbling Barrels.**
Henderson Bros., Waterbury, Conn.
- Turnbuckles.**
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.
- Twist Drills, Makers of.**
Cleveland Twist Drill Co., Cleveland, Mass.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.
- Valves, Gas, Water and Steam.**
Best, Fox & Co., Pittsburg, Pa.
Chapman Valve Mfg. Co., Boston.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 66 John N. Y.
Mason Regulator Co., Boston, Mass.
- Ventilator Appliances.**
Howard & Morse, 45 Fulton, N. Y.
- Vise Jaws.**
Newark Mch. Tool Co., Newark, N. J.
- Vises.**
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay, N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.
- Wagon Jacks.**
Wagon & Lockport Block Co., Boston, Mass.
and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
- Washers.**
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.
- Water Meters.**
Worthington, Henry R., 86 & 88 Liberty St., N. Y.
- Water Wheels.**
Poole, Robt. & Son Co., Baltimore, Md.
- Well Boring Machines.**
Oil Well Supply Co., Pittsburg, Pa.
- Well Machinery.**
Amer. Well Works, Aurora, Ill.
- Wheelbarrows.**
Akron Tool Co., Akron, O.
Amer. Steel Scraper Co., Sidney, Ohio.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Swett Mfg. Co., Minneapolis, Minn.
- Whips.**
American Whip Co., Westfield, Mass.
- Window Cord, Makers of.**
Samson Cordage Works, Boston, Mass.
- Wire, Manufacturers of.**
Amer. Spiral Spring Co., Pittsburg, Pa.
Amer. Wire Nail Co., Anderson, Ind.
Consolidated Steel & Wire Co., St. Louis, Mo.
Gaudier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wetherell Bros., 93 Liberty St., N. Y.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Wire Cloth.**
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 12 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire Wks. Co., Milwaukee, Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleveland.
- Wire Cutters.**
Bigganum Hdw. Co., Higganum, Conn.
King, J. M. & Co., Watertown, N. Y.
- Wire Dies.**
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.
- Wire Door Mats.**
Hartman Mfg. Co., Beaver Falls, Pa.
The Wire Goods Co., Worcester, Mass.
- Wire Fences.—See Fencing, Iron and Wire.**
- Wire Goods, Manufacturers of.**
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwalk, Conn.
Scheeler & Sons, Buffalo, N. Y.
Whitman & Barnes Mfg. Co., Syracuse, N. Y.
- Wire Goods Co., Worcester, Mass.**
Wickwire Bros., Cortland, N. Y.
Williamson, C. T., Wire Novelty Co., Newark, N. J.
- Wire Machinery.**
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester, Mass.
Waterbury Mch. Co., Waterbury, Conn.
- Wire Straightening and Outfitting Machinery.**
Adt, John & Son, New Haven, Conn.
- Wire Nails.**
Amer. Wire Nail Co., Anderson, Ind.
Baackes Wire Nail Co., Cleveland, O.
Consolidated Steel & Wire Co., St. Louis, Mo.
Field, A. & Sons, Taunton, Mass.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Phillips, E. & Sons, South Hanover, Mass.
Phillips, Townsend & Co., Phila., Pa.
Plymouth Mills, Plymouth, Mass.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City
- Wire Reels.**
Buchanan Fence Co., Smithville, O.
- Wire Rods, Steel.**
Amer. Wire Nail Co., Anderson, Ind.
Consolidated Steel & Wire Co., St. Louis, Mo.
Illinois Steel Co., Chicago, Ill.
New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Wire Rope, Iron and Steel Makers.**
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco.
Hazard Mfg. Co., Wilkesbarre, Pa.
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Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Williamsport Wire Rope Co., Williamsport, Pa.
- Woodenware.**
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
- Wood-Working Machinery.**
Fay, J. A. & Egan Co., Cincinnati, O.
Sebastian Lathe Co., Cincinnati, Ohio.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Wrenches, Manufacturers of.**
Bemis & Call Hardware & Tool Co., Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn.
Capitol Mfg. Co., Chicago, Ill.
Central Iron & Steel Co., Brazil, Ind.
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Keystone Mfg. Co., Buffalo, N. Y.
Portsmouth Wrench Co., Boston, Mass.
Trinmont Mfg. Co., Roxbury, Mass.
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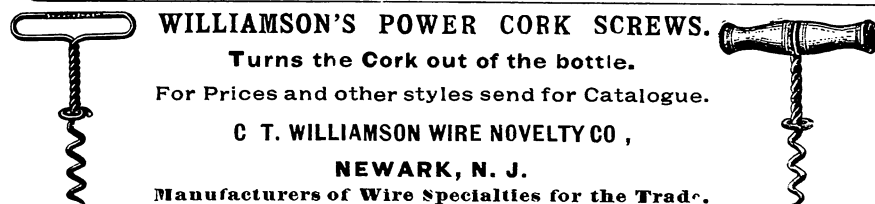
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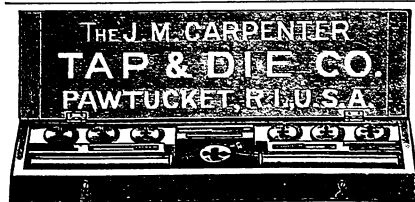
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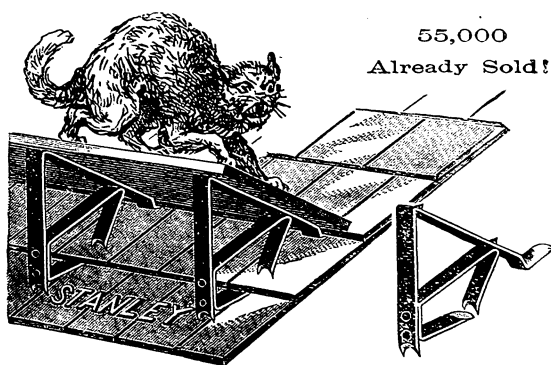
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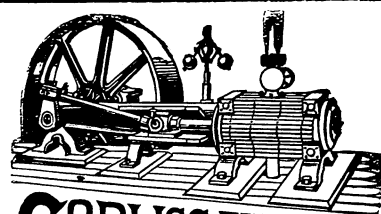
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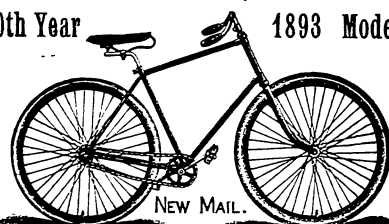
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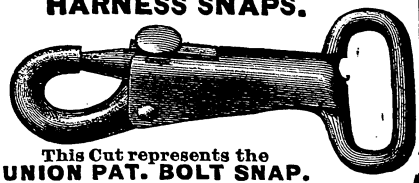


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THE IRON AGE

THURSDAY, JUNE 8, 1893.

Twin Rim Drilling Machine for Bicycles.

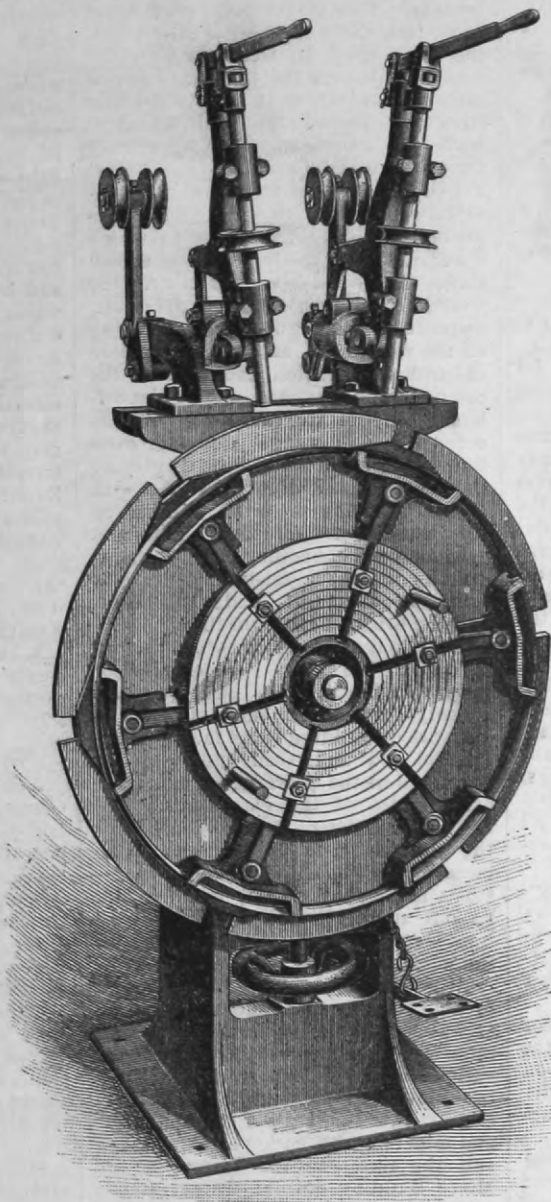
This machine was designed by the Rudolphi & Krummel Machine Works of 100 North Clinton street, Chicago, for drilling and counterboring the nipple or spoke holes of bicycle-wheel rims. The rim is firmly held on an expanding chuck which supports it at 12 points. The jaws of the chuck are operated by means of a center disk and connecting links swung on their inner ends from studs which can be quickly adjusted in slots provided for them in the center disk, to suit rims of different diameters. The chuck, with the index plate in the back, can be raised by means of a hand wheel and screw. The index plate is worked by depressing the treadle, the disk being locked firmly while the drilling is being done. Any desired number of holes can be drilled by simply changing the index plates. The drill spindles are adjustable in all directions to accommodate any kind of wheel. Shoulder drills are used on this machine, which saves time and turns out accurate work. As the nipples rest perfectly in their seats the full strength of the spokes is utilized. The machine will take in wheels 24 to 32 inches in diameter.

Load for Ball Bearings.

In opening a topical discussion before the Engineers' Club of Philadelphia, Wilfred Lewis explained that the question was intended to cover roller bearings as well as ball bearings, and that in view of the large and increasing demand for these bearings, it was remarkable how little definite information could be obtained concerning them. Some time ago he wrote to a prominent manufacturer of ball bearings for such data as could be given in regard to the carrying capacity of hardened steel balls between plates of the same material, and in reply he was informed that almost nothing was positively known. Some crude experiments had been made upon $\frac{3}{4}$ -inch balls, which showed them to have an ultimate strength of 2000 pounds, and a safe working limit of 400 pounds, but for car journals, in which the motion was continuous and rapid, 200 pounds per ball was recommended as preferable. Whether a $\frac{3}{4}$ -inch ball would carry twice as much or four times as much as a $\frac{1}{2}$ -inch ball, could not be stated, but the impression seemed to be that, over a given extent of surface, more load could be carried on small balls than on

large ones. The effect of hardening was believed to increase tenfold the carrying capacity of a ball bearing.

In regard to roller bearings, but one formula is known to be in common use. This makes the load carried by any given roll proportional to the square root of its diameter, and the general adoption of this formula may be credited to the authority of the late C.



TWIN RIM DRILLING MACHINE FOR BICYCLES.

Shaler Smith, while the investigation upon which it is based is said to be due to Professor Grashof.

The largest cash deal in real estate in New York of which there is any record was the sale of the site of St. Luke's Hospital, comprising a single square, 200 x 400 feet, on Fifth avenue above Fifty-fourth street, for \$2,400,000. The price 50 years ago was \$50,000.

Granite City.

At the invitation of F. G. & W. F. Niedringhaus, about 100 gentlemen, representing the commercial interests of St. Louis, visited Granite City, Ill., the new city established by the Niedringhaus Bros., on Saturday, the 27th ult. The occasion of the visit was the

opening of the new Union Depot and the breaking of ground for the new factories of the St. Louis Stamping Co. A special train was provided which conveyed the party to the ground, where they were shown over the city by F. G. Niedringhaus, after which they were invited to partake of a collation tendered. Addresses were made by leading citizens of St. Louis, who wished the new city every prosperity, and one and all took occasion to congratulate F. G. Niedringhaus, president of the St. Louis Stamping Company, upon the change which had been wrought in a place which a few months since contained nothing but trees and underbrush, but which to-day is a beautifully laid out tract. The city will contain the works of the St. Louis Stamping Company, comprising an open-hearth steel furnace, a rolling mill and stamping works, which will employ between 1200 and 1500 people. In addition to this plant will be the machine shops of the St. Louis Chicago & St. Paul Railroad, the Goltra Steel Company, whose plant will occupy 5 acres, with a daily output of from 75 to 100 tons of steel, and a car spring and car coupler works will also be built. Granite City will contain an extensive and modern gas works, electric light works, a large and modern hotel, public schools and many residences, a number of which are already finished. Granite City is located in Illinois on the east side of the Mississippi River, about 2 miles from the city of St. Louis. Nineteen railroads give access to the East, assuring cheap freight, rapid transit and no bridge charges. The city is also surrounded with a belt line, which connects it with

every railroad centering in St. Louis, 27 in number, thus giving it all the railroad advantages enjoyed by St. Louis itself. There are also 3 miles of river front, securing access to river navigation and at the same time river rates on freight. A free public library will be built.

The coal fields adjoining this city supplied 4,000,000 tons of coal during the year 1892. We are informed that a saving of from \$8 to \$10 per car is made on coal delivered in Granite City.

When this is taken into consideration, and the railroad facilities are borne in mind, it is easily understood why the St. Louis Stamping Company and others have decided to move their plants to this point.

There are a number of manufacturing concerns who are at present negotiating for ground on which to erect their plants, but the negotiations have not as yet reached a point where their names can be published.

Employees as Stockholders.

President Fish of the Illinois Central Railroad Company has just issued, at Chicago, the following circular to the officers and employees of his road. It puts in practical shape a plan that has been for years talked about and has received considerable publicity:

An expression on the part of many of the company's officers and employees of a desire to invest their savings in the stock of the Illinois Central Railroad Company having reached the Board of Directors, they have thought that considerable saving in every department of the service could be effected by such a community of interest, and have authorized me to make to each of you the following offer, viz.:

While the company have no stock for sale, they will assist any of their officers or employees to buy one share at a time at the fair market price, to be fixed when application is made, purchaser to pay for his shares in sums of \$5 or multiples thereof. Payments may be made to the treasurer, the local treasurer in New Orleans, the paymaster or the assistant paymaster. On the amounts so paid interest will be credited at the rate of 4 per cent. per annum, and when the sum at the credit of any purchaser amounts to the price at which the stock was bought, he shall receive a certificate for his share of stock, and can then, if he wishes, begin the purchase of another share. The certificate of stock is transferable on the company's books, and entitles the owner to such dividends as may be declared by the Board of Directors, and to a vote in their election.

Any officer or employee making payments on this plan can have his money returned to him, with interest, on application, through the proper channels, to the head of the department in which he is employed.

Should a purchaser make no further payments during 12 consecutive months interest shall then cease to accrue on his payments, and the sum at his credit will be returned to him with the accrued interest on application.

In case a purchaser leaves the service of the company from any cause he must then either pay in full for his share and receive a certificate therefor or take his money with the interest accrued to the date of his leaving the service.

The foregoing does not preclude the purchase of a large number of shares of stock for cash.

Any employee desiring to so purchase should apply to either of the representatives of the treasury department named above, or to his immediate superior officer.

I sincerely trust that this offer will be accepted in the spirit in which it is made, and will be generally availed of for our mutual benefit.

The assessed valuation of Detroit is nearly \$15,000,000 larger than it was last year.

WORLD'S FAIR NOTES.

Pennsylvania's Mining Exhibit.

Pennsylvania's pavilion in the Mining Building is just in front of the north entrance east of the main aisle. Stepping into the pavilion the visitor passes between neatly finished glass cases containing 300 bottles filled with petroleum and petroleum products. In front of these cases stands a huge relief map of the State, 7 x 14 feet, showing the location of all coal and iron mines, oil and gas fields, blast furnaces, pipe lines and railroads. The most attractive feature in the exhibit is a complete working model of a coal mine and breaker. The model occupies a space 24 x 8 feet. Nine engines are shown with the work they do from the time the coal is hauled up the inclines, dumped into screens, where it is assorted into sizes and loaded into railroad cars, while the mine cars return by gravity for fresh loads.

Beside the model stands a little pavilion constructed to show the possibilities of slate. Every use to which slate can be put—for roofing, school slates, and so on—is shown. At the west side stand 16 truncated pyramids, disposed in rectangular form, showing all the varieties of anthracite found in the anthracite region and also all the commercial sizes. Analyses of the different varieties are exhibited. At the corners of the rectangle are glass cases 2 feet square and 8 feet high displaying the varieties of bituminous coal. A colored drawing is shown, illustrating the manufacture of zinc oxide and spiegeleisen. Another case contains samples of the 30 varieties of fire clay found in the State, crude and burnt, and the bricks made from it.

Next to it are cases showing the varieties of tile clays, crude, floated, ground, unburnt, burnt, glazed and unglazed. There are also samples of the 78 varieties of building stone in the State, finished and unfinished, shown at the north end of the pavilion. Then there are samples of the glass sands of the State, the different mixtures used for the various kinds of glass and specimens of the finished product. Soapstone, nickel, manganese, iron ore and various stages in the manufacture of iron with charcoal, anthracite and bituminous coal are to be seen.

Near the model of the mine and breaker stands a primitive furnace, such as was used in the beginning of the iron industry. Grouped about it are the various tools used in mining. Upon the south and east walls are photographs, charts and maps of geological and mineralogical surveys, relief maps and the like. In the center of the Mines Building not far distant stands what the Pennsylvanians call an anthracite "needle." It is a shaft of anthracite showing a vertical section through a 54-foot vein in Schuylkill County, with the coal, slate seams, &c., in their proper place.

A California Midwinter Fair.

Californians in attendance at the World's Fair have conceived the idea of holding a fair on the Pacific Coast next winter as a sequel to the Chicago fair. Having secured the necessary financial backing by correspondence with their home institutions, they have gone so far as to specifically announce that an exposition will be given in Golden Gate Park, in San Francisco, which, opening on December 25 of this year, will be continued during a period of 25 weeks

following. In the 25 vacant acres in Golden Gate Park four great buildings will be erected, and to these all the principal foreign exhibitors now having space in the World's Fair buildings at Jackson Park will be asked to exhibit their wares before Californians and visitors from the East and West.

From National Commissioner M. H. De Young of California came the original plan of the projected midwinter commercial World's Fair. The vast extent of the exhibits now at Jackson Park made the plan of putting them into smaller space seem scarcely feasible. But the business interests represented by the exhibitors and the small cost of transportation of those exhibits to California after the close of the World's Fair here made the matter appear in a more practical light. Then came in the consideration of California's glorious climate, a climate where autumnal sunshine fades into the quickening glow of springtime without a day of snow or an hour of winter. Many exhibitors who had gone to enormous expense in making their short-time display at Jackson Park bailed with delight a chance to visit the great West, to them almost commercially unknown, and be afforded a chance to show their wares and perhaps enter into commercial relations with States that they only knew from the pictures in illustrated geographies. During these little informal chats Commissioner De Young chanced to lay his plans before R. Cornely of the German commission and formerly director-general of the Bremen Exposition. Mr. Cornely hailed the plan as a great and glorious one. He immediately enlisted, and within a score of days following he had secured the verbal promise of over 2000 exhibitors in the German, Italian, Swiss, French and Austrian sections to send the best they had in the showcase to California's Commercial World's Fair immediately after the gates at Jackson Park shall close.

The Award System Modified.

John Boyd Thacher, chairman of the Committee on Awards, has, it seems, at last yielded to the pressure brought to bear upon him by foreign and American exhibitors and modified his interpretation of the rules governing the awards. On Tuesday of last week he addressed a letter to the foreign commissioners in which he intimated, it is said, that more than one examiner might be appointed in case a desire to that effect were expressed by the commissioners. The communication was addressed to Camille Krantz, the French Commissioner General, who laid it before a meeting of foreign commissioners the same day. The letter was regarded as being conciliatory, but was not sufficiently clear to satisfy the members, and accordingly Mr. Thacher's assistant, ex-Governor Hoyt, attended the session to elucidate the meaning of his chief's letter. After much questioning Mr. Hoyt made the statement that two or more examiners could be named to pass upon an individual exhibit instead of a single expert judge. This interpretation of the letter was regarded generally as being satisfactory, but to be certain of their ground the commissioners wanted a written statement from Mr. Thacher. They also complied with a previously expressed wish of his that a committee be appointed to meet him and listen to his propositions. There were 30 commissioners in attendance, and from their number they appointed a committee of five, as follows: James Dredge of Great Britain, Adolf Wermuth of Germany,

Anton von Palitschek-Palmforst of Austria, J. J. Grinlinton of Ceylon, and Manuel Lemus of Guatemala.

On Wednesday Mr. Thacher himself went before the Special Committee of Foreign Commissioners and told its members they could have juries to pass upon their exhibits. He made this statement so clear that there was no misunderstanding his meaning. This was, of course, very gratifying to the commissioners. But Mr. Thacher did not entirely yield another point for which they have contended, and that is that the Departmental Committee shall have the exhibit written up by the person or persons whom they should designate. At this time, however, it developed that somebody had acted without authority in withdrawing the British exhibits from competition for awards. The secretary of the British commission advised the Foreign Affairs Department that the withdrawal was not approved by the commission.

On Thursday Vice-Chairman King of the Executive Committee on Awards issued to Arthur Leffler, the secretary of the Foreign Commissioners' Association, an authoritative statement of the attitude of the Bureau of Awards, in which it is denied that a one-judge system is to be adhered to. Nothing could be plainer or more conciliatory than the language in which this communication was couched, and it helped strongly to clear up all points of difference. On Friday the foreign commissioners met and addressed a letter to Director-General Davis saying that they would consent to Mr. Thacher's compromise if he gave assurances that it would be carried out. The foreign delegates seemed to fear that Mr. Thacher would go back to the one-judge plan after they had restored their exhibits to competition. The commissioners still insist that the juries shall apportion the work among themselves instead of receiving instructions from Mr. Thacher. While they object to that feature of the plan it is probable that the representatives from Sweden, Norway, Japan, Italy, and perhaps several other nations, will come in for competition rather than have any further discussion with Mr. Thacher. They have secured the jury system, and if that is the only concession they can get, they will accept it under protest. Thus, what might have proved a very disagreeable episode in an international fair has very probably been so well settled that it will no longer vex officials and exhibitors.

The Sunday Question.

Affairs are getting entangled now with regard to Sunday opening. Every department of the fair was thrown open on the last Sunday in May. The machinery was not in operation, but in every other respect the display was the same as through the week, although here and there exhibits were covered by owners who were not in favor of Sunday opening. The day was pleasant and the attendance was large, but not up to the extravagant figures that had been widely estimated by the enthusiastic advocates of an open Sunday. The attendance on Decoration Day, two days afterward, far surpassed it.

Litigation on this question is now proceeding. On Monday of last week the exposition directors were temporarily enjoined from closing the fair on Sunday by Judge Stein of one of the State courts, in the suit of Charles W. Clingman against the World's Columbian Exposition to enjoin them from Sunday closing. The questions at issue were gone over in the opinion, which is

quite a lengthy one, but which rests mainly on the ground that Jackson Park was given to the people for public uses only and that no power existed to debar them from using it on any day of the week. The logic of the decision seems to be in favor of the free admission of the public also, but that point was not pressed. The preliminary injunction expires on the 8th inst. and is then expected to be made perpetual by the Sunday openers. On the following Wednesday, however, Judges Wood, Jenkins and Grosscup, sitting as the United States Circuit Court for the Northern District of Illinois, took up the hearing of the chancery suit of the United States *vs.* the World's Columbian Exposition Company, to enforce the Sunday-closing clause adopted by Congress. The whole question of the rights of the parties, the condition of the contracts, and the powers of the company to make and enforce a Sunday opening rule was discussed by counsel, the hearing occupying several days. Another suit to enforce Sunday closing has also been brought by Wanamaker & Brown of Philadelphia and P. W. Pratt of Massachusetts, stockholders in the Exposition Company, who claim that their stock will be injured by the adoption of the measures necessary to satisfy the Government in case the exposition is regularly opened on Sunday.

The Sewage Cleansing Works.

From no odor would the large white building in the southeast corner of the grounds be discovered as the sewage cleansing works. It is marked 1K on the maps, and is well worth a visit by all interested in sanitary matters. The system of sewers and the works were placed by W. S. MacHarg, one of Chicago's engineers, who is engineer of the water supply, sewerage and fire protection of the exposition. Conveniently located to the different buildings are 26 large pits into which the sewage from the adjacent buildings runs. Connecting these pits with the branch sewers are 52 ejectors, which work automatically by compressed air, emptying the contents of the pit through the branches into the main sewer running to the cleansing works. Compressed air for all purposes on the grounds is secured from a central plant for compressing it in Machinery Hall. On reaching the works the air pressure raises the fluid about 50 feet through a 36-inch pipe, where it overflows on a wire sieve which catches sticks and other insoluble matter. Passing through the sieve it falls to the bottom and through pipes it enters four purifying tanks, each of a capacity of 250,000 gallons. In the pipes which carry it to these tanks a solution of alum is thoroughly mixed with it by mechanical means, and at another point a solution of lime is mixed in the same way. In three of the tanks alum and lime are used, but in the fourth copperas and lime give apparently the same results. Slowly passing through these tanks the sludge settles at the bottom, and the clarified water made chemically pure passes off to Lake Michigan. By a careful system of measuring this outgoing water an increase in attendance at the fair is detected very quickly. The sludge which collects at the bottom of the tanks is pumped off and forced through the filter by compressed air, the accumulation being pressed into cakes at a pressure of 110 pounds. These cakes are taken to a garbage furnace and burned, a jet of crude petroleum forced in with a blast of compressed air being the only fuel used. The works are

under the charge of Allen Hazen, a chemist from the experimental station of the Massachusetts State Board of Health at Lawrence, Mass., who has been detailed for this important work out of courtesy from the Bay State to the World's Fair, through the influence of Engineer MacHarg. The attendance at present sends about 1,000,000 gallons of sewage to the works every day, and the capacity is 6,000,000 gallons. The increased attendance on Decoration Day sent 299,000 gallons extra sewage to the works. At the present rate of attendance about 4150 tons of sewage are handled daily and the solid matter after being pressed weighs but 3 tons. The crude oil, used for various purposes about the grounds, is brought from Lima, Ohio, by a pipe line. For burning the sludge from the works and the garbage made inside of the gates about 500 gallons of crude oil are consumed daily.

In addition to cleansing this sewage, Mr. Hazen is compiling some other statistical information in reference to the work. The principal visitors to call on Mr. Hazen have been sanitary engineers, and doubtless with the Mecca of the United States being located at Chicago this year, his interesting charge and the genial courtesy of both himself and his assistant will bring him many other visitors.

We recently saw at the New York office of Henry R. Worthington a set of 13 pictures, showing exterior and interior views of the Worthington Hydraulic Works at Brooklyn and Elizabethport. These pictures are bromide enlargements, 30 x 40 inches, from original plates 11 x 14 inches, made by Geo. P. Hall & Son of New York, and are to be used in connection with the Worthington exhibit at the fair. The subjects were so selected as to convey a good idea of the magnitude of the works, and to give a clear conception of the detail arrangement of the several departments. From a photographic point of view the pictures are exceptionally fine.

Progress in Shipbuilding.—Altogether the year 1893 will be a memorable one for the new navy. While the shipbuilding establishments, private and public, have probably not been any busier than last year, their work of previous years is brought more conspicuously before the public by reason of the great number of vessels which have either reached the launching, trial or commission period. More prompt deliveries of material by the steel producing plants have also operated to expedite work in ship construction during the present year. Briefly summed up, the year's progress—not counting vessels on the ways—will show the "New York," "Detroit," "Montgomery," "Marble Head," "Machias," "Cestine," "Bancroft," "Cincinnati" and "Raleigh," which have been tried, and all will be in commission except probably the two last named; the launching of the battle ships "Indiana," "Massachusetts" and "Oregon," "Ammen" ram, protected cruisers "Columbia" and "Minneapolis" and torpedo boat "Ericsson."

St. Louis has hopes of the development of a supply of natural gas. An artesian well drilled at Vandeventer avenue and Manchester road, about 600 feet deep, has given some indications of its being a gas well, and is being watched with much interest as its boring proceeds to a greater depth.

The Evolution of the Tuyere Stock.

BY FRED. W. GORDON, PHILADELPHIA.

The writer believes himself to be the first who followed up the plan of conducting the blast from the bustle pipe to the tuyere through an inclined pipe. As early as 1869 the first illustration was introduced. This had a pair of eye bolts revolving around trunnions, the center line of which passed through the center of a segment of a cylinder, which formed the joint around which the blow pipe revolved. In this way the blow pipe could be withdrawn from the

clined form from the ring that revolved upon a number of balls running in an annular groove. This tuyere stock can be accommodated slightly to the position of the tuyere by lengthening or shortening the hanging bolts, the upper ball joint then permitted a connection with the tuyere, in which case, when the tuyere had to be removed, the tuyere stock could be revolved around out of the way by simply loosening the hanging bolt in front, the others relaxing themselves, as the weight was all held by the front one.

Following this came the tuyere stock of 1876, which was first introduced at

of the joint is made by keys driven in below the trunnions. The horizontal portion is arranged with ball joints at each end.

In 1885 the next tuyere stock was brought out. The mast of the little crane carrying the lower portion is so located that the center line of its axis being prolonged, it passes through the center of the ball, forming the joint; the spring bolt, from which the lower half is hung, should be so attached that the center of gravity of the blow pipe is in line with it when the pipe assumes its natural inclination. Thus it was readily managed. The pipe is swung around out of the way and swung back

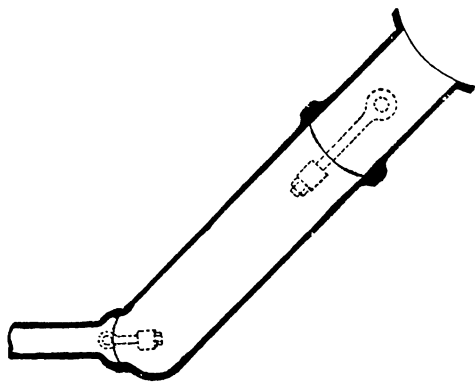


Fig. 1.—Design of 1869.

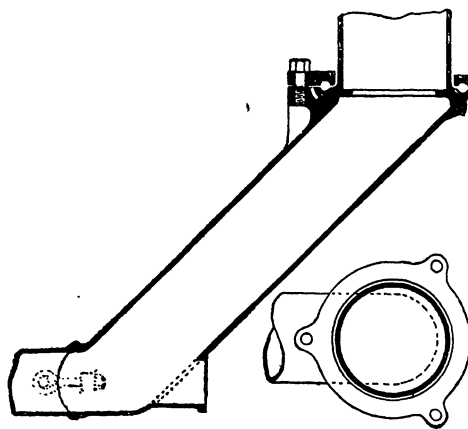


Fig. 2.—Design of 1874.

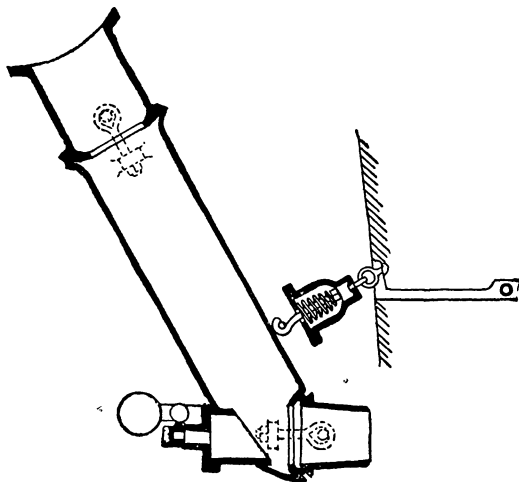


Fig. 3.—Design of 1876.

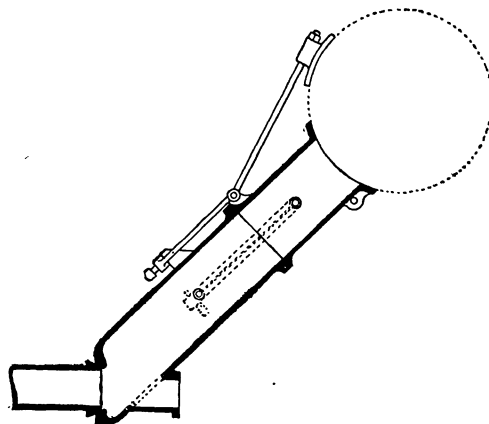


Fig. 4.—Design of 1881.

BLAST FURNACE TUYERE STOCKS.

tuyere at will and propped up so as to be completely out of the way while the tuyere was being changed. It, however, did not present the facility of being changed sidewise to accommodate the position of the tuyeres, and if they were not in line with each other the blow pipe or horizontal portion had to be set at an angle. In those days, however, metallic joints against the tuyeres were unknown, or, at least, John Player's invention had not been introduced in this country. As that, however, only employed the fast joint at the butt of the tuyere without fastening the tuyere, the tuyere itself might be accommodated to the circumstances.

In 1874 the revolving blow pipe was introduced at the Etna Iron Works, from the writer's plans. It was, as shown in Fig. 2, suspended in an in-

the Dunbar Furnace. All these were made by the then firm of Lambert & Gordon, Ironton, Ohio, of which the writer was managing partner. This tuyere stock was similar to that of 1869, except that it had a ball joint instead of a cylindrical one, thus permitting adjustment sidewise as well as up and down, and it had a spring connection to the furnace bosh, furnishing adjustment for expansion and contraction, and permitting the use of metallic joints. The weight of this stock, when sometimes made quite long, was an objection to its use, and it was followed by the arrangement shown in Fig. 4, in which the trunnions are secured in a positive position from the fixed upper portion of the stock, and within which the lower portion revolves concentric with the upper joint. The tightness

again with comparatively little effort. The heavy spring in the spring back, located in the jib of the crane, furnishes the necessary elastic element of expansion and contraction, keeping the upper and lower joints, as well as the joints at the tuyere, tight under all changes of temperature, and even providing for vast changes in the length of the hot-blast mains.

Lately the Philadelphia Engineering Works of Philadelphia have devised the blow pipe, Fig. 6, known as the 1893 model. This has some of the features of the blow pipe of 1881—that is, the trunnions are situated as they were in that pipe, but the bearings for these trunnions are not fixed, but swung from two spring bolts, which are carried by a carriage, playing upon a horizontal bar. Thus the features necessary for

varying temperatures are provided, while the stock can be revolved around these trunnions and the whole pushed

great promptness. In these days of large makes quick manipulation is important and the introduction of a tuyere

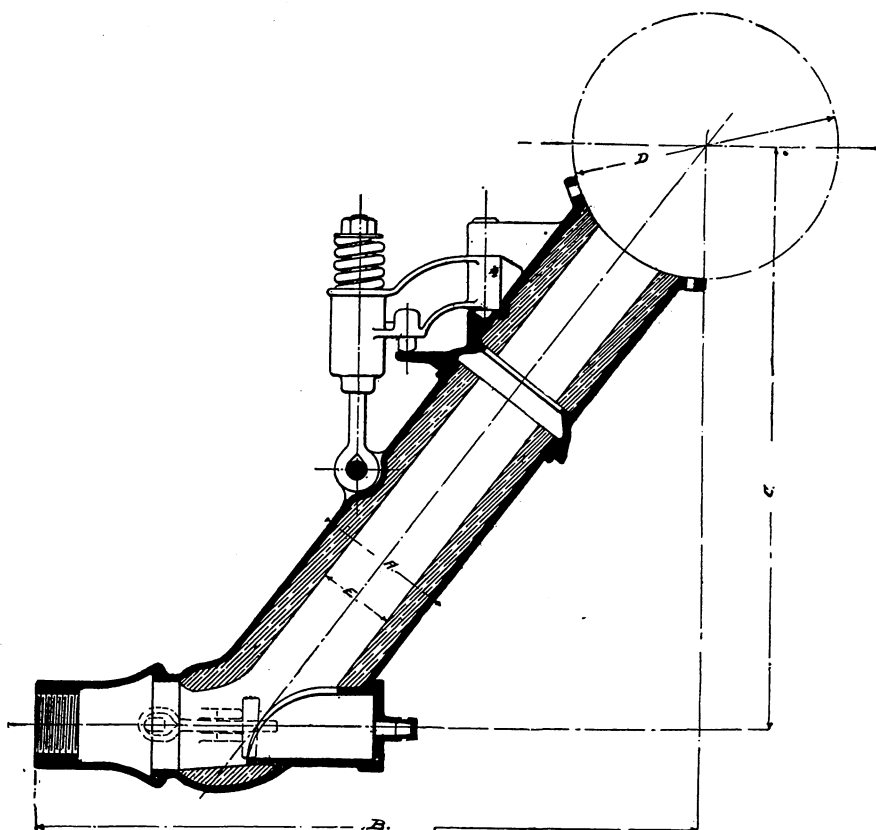


Fig. 5.—Design of 1885.

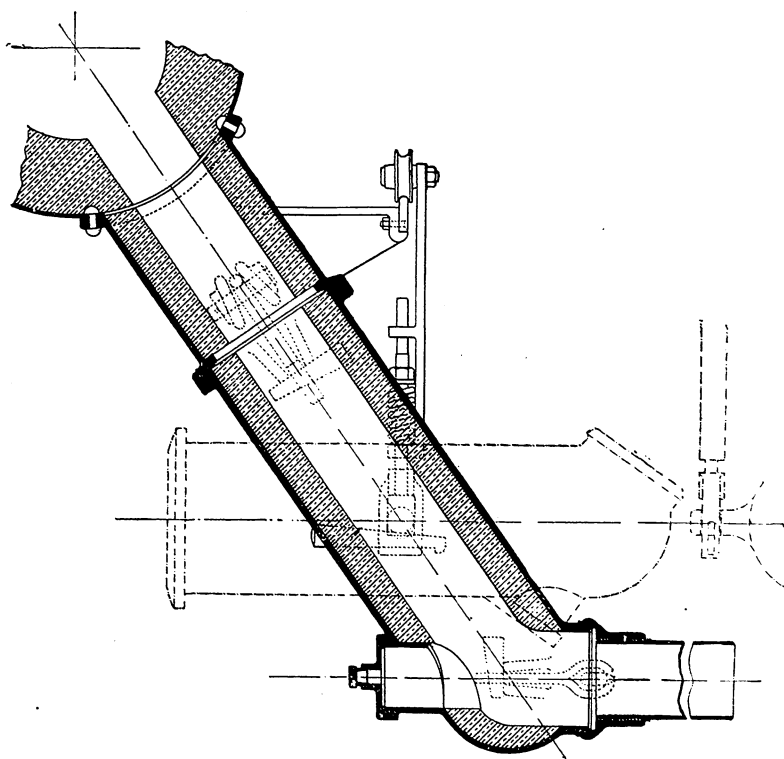


Fig. 6.—Design of 1893.

BLAST FURNACE TUYERE STOCKS.

to one side. The tuyere or tuyere arch can be gotten at without the least inconvenience and the blow pipe returned to its place and adjusted with

should be effected in not to exceed ten minutes. This can be done with good blow pipes and many jointed water connections.

The Grant Locomotive Works Embarrassed.

A call has been issued for a meeting of the stockholders of the Grant Locomotive Works, at Chicago, to devise means to tide over a temporary financial embarrassment which confronts the concern. The difficulty which the company are called upon to meet and overcome was brought about mainly through the recent strike of the machinists employed at the works, but the financial stringency prevailing all over the country has also had something to do with the trouble.

About one month ago the machinists employed by the company demanded an increase of wages and were refused. The men went out on strike, leaving an immense quantity of work unfinished, and, as a result, a large amount of working capital of the concern tied up in material which was not marketable. The difficulty thus created was intensified by the fact that the company were unable to obtain sufficient financial accommodation to tide them over the trouble. This was the condition of affairs when an attachment suit for a small amount was begun in the Circuit Court a few days ago by one of their creditors, an Eastern corporation. This suit was the first suggestion to the management of a possible danger of a "run" on the company by their creditors, and it is to prepare for any such contingency that the meeting of stockholders has been called.

William H. Fenner, Jr., president of the Grant Locomotive Works, talked freely in respect to the matter to a reporter. "There is really no cause to worry in regard to this temporary embarrassment," said Mr. Fenner. "Of course, if our creditors were to press us very hard and refuse time it might make some trouble for us, but I don't apprehend anything of that kind. Our machinists went out a few weeks ago, when we had a large and valuable contract with the Chicago, Burlington & Quincy Railroad for a number of locomotives. These engines were not quite finished, and we were therefore unable to deliver them to the railroad company. Thus our money was practically tied up in an immense amount of unfinished work, which we were unable to push to completion so as to get our money back. We could not get the engines out in time to release the money invested in them."

"Is the entire amount of your capital invested in the works you are carrying on?"

"Our entire working capital is invested in the plant and the execution of our contracts. But I want to impress on the public the fact that there is enough stock and material in the shops to pay all our indebtedness and leave a large surplus to our credit."

"How do the stockholders hope to surmount the present difficulty?"

"I cannot tell what they will do in advance. Whether they will decide to borrow or find other means of raising what is required I do not know. I may say in this connection, however, that we are getting new men every day to take the place of the strikers, and we expect to be able to deliver at once those goods which have been lying on our hands, and thus realize all the money we want. So far as the company are concerned, they have the means to pay every dollar of their liabilities, and the only danger that could possibly arise would be impatience on the part of the creditors."

Mesaba Mines.

Late last fall the Adams Mining Company began exploration work in the southwest corner of township 58, range 17, on the Mesaba range, 45 miles north of and 17 miles west of Duluth. Although only about eight months have passed the Adams is conceded by Mesaba miners to have an immense body of ore, probably the largest by far of any on the new range. It is an ore body so situated that it will be, to all appearances, very easily mined, though there have been as yet no efforts toward taking out ore other than what is lifted in the ordinary course of test-pit sinking by winches.

Ore has been found in an irregular area of about 180 acres, the company owning section 31, 58, 17. Sixty pits have been sunk into ore, and nearly a dozen more are now being put down in different parts of the property, which are expected to show ore. Of course a number of unsuccessful pits were put down before the area of the ore body became well defined. I judge that the average depth, in ore, of the 60 pits referred to is about 30 feet, though several are down 60 feet, and one has been pushed through 70 feet of blue ore without finding the bottom of the de-

lumbian Exposition assayed as follows:

Iron.	Phos.	Silica.	Mang.	Water.
65.40	0.031	1.61	0.88	4.28
66.80	0.023	1.24	0.48	2.35

The mine will be operated by the stripping proposition, and a contract has been made with a heavy Pittsburgh concern, Drake, Stratton & Co., for the taking off of 200,000 yards of surface this year, while a similar contract is expected to be let next spring.

The mine is located on the slopes of a hill, and on the face of this hill the ore body has a surface, sand and clay, of about 9 feet. As the hill rises the surface deepens, till at the summit there is nearly 50 feet of clay, sand, gravel and ocher overlaying the ore. On the rear of the hill the surface diminishes again. The stripping will be done on each side of the hill till the surface approaches 30 feet in thickness, when the ore under the deeper surface will be reached by levels and cut out by gravity.

The Adams Mining Company, who are stocked for \$1,000,000, 90,000 \$10 shares having been issued, hold a lease to the above described property from a syndicate of lumbermen—E. M. Fowler of Chicago, S. J. Murphy and T. E. Dorr of Saginaw, and Elisha Flynn and Geo. O. Robinson of Detroit—who bought the land for pine. The stock

Artistic Wrought Iron.—I.

Probably no material, wood not excepted, is adaptable to such a wide range of application or can be wrought into so many and varied forms of usefulness and beauty as that dominating substance of the age—iron. Iron enters into almost every branch of constructive effort, from mighty bridges and monstrous ocean steamships down the whole scale of manufacture to the humble needle of every day use. But little thought has, however, been given—at any rate in modern times—to the artistic capabilities of this great medium, which are, nevertheless, really wider and more important than they are popularly known to be.

Old Iron Work.

Decorative iron work was practiced among the ancients. It received great attention in the Middle Ages, and even down toward the end of the last century. In the period of its greatest prosperity, that is to say, from the thirteenth to the seventeenth centuries, including the great era of the Renaissance, or new birth of art in Europe, work in wrought iron was an art professed and practiced by artist-workmen,

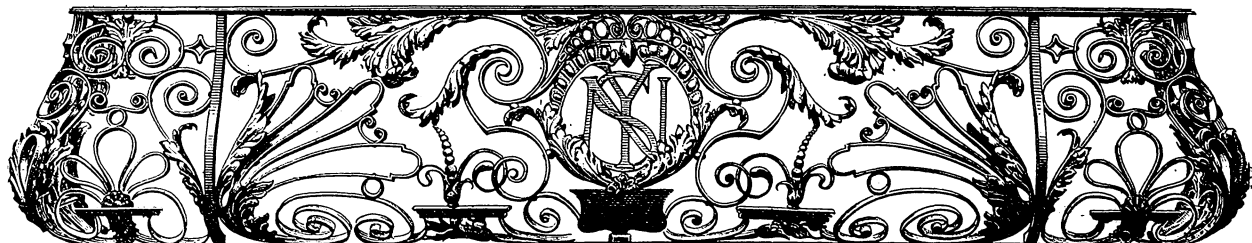


Fig. 1.—Wrought-Iron Balcony, New York State Building, Columbian Exposition.—John Williams, New York.

ARTISTIC WROUGHT IRON.

posit. Indeed, no test pit has so far reached the foot of the ore body. The ore of this property is a remarkably uniform deposit of a bluish granular ore, having the characteristic hematite streak, and is nearly all of a Bessemer grade. It is of unusual density for Mesaba ores and runs about 9 or 10 cubic feet to the ton. The owners of the mine estimate that there is not far from 25,000,000 tons of ore in sight in the mine, and there is no apparent indication that these enormous figures are beyond a reasonable estimate of the truth. Developments must be much further pushed, however, before there can be any reliable figures as to the quantity of ore actually in this mammoth deposit.

The following series of analyses, one taken at random from each of 16 pits, gives an idea of the quality and uniformity of the ore body:

Depth from surface of ore.	Iron.	Phos.	Silica.
1 foot.....	61.41	0.042	...
20 feet.....	58.21	0.031	8.82
21 feet.....	61.70	0.025	6.25
35 feet.....	59.55	0.055	7.07
9 feet.....	64.45	0.044	3.18
18 feet.....	61.12	0.037	...
12 feet.....	66.50	0.033	1.52
17 feet.....	64.30	0.053	3.47
15 feet.....	60.60	0.029	5.61
17 feet.....	64.40	0.040	3.18
25 feet.....	65.25	0.023	1.83
15 feet.....	64.55	0.028	2.59
20 feet.....	61.80	0.035	6.23
14 feet.....	66.87	0.026	1.78
20 feet.....	65.90	0.034	3.65
1/2 foot.....	59.10	0.040	9.32

Samples sent by this mine to the Co-

in the company is almost entirely owned by P. L. Kimberley of Sharon, Pa., John T. Jones, formerly manager of Ludington Mine at Iron Mountain, Mich., and D. T. Adams of Duluth. The Adams will not be a shipper in 1893 to any extent, but promises to get out a very large quantity of ore in 1894.

The Duluth, Missabe & Northern Road was voted county aid to the amount of \$250,000 by an almost unanimous vote. The road has ironed 4 of the 24 miles of cut off to Duluth, and has begun the erection of the second story of its ore dock, which is to be nearly 1000 feet longer in shipping pocket length than any other dock in existence. The road and dock are expected to be in shape for handling on July 1.

The Lone Jack Mine in 17, 58, 17, has its inclines built, its skips in running order, and is hoisting a little ore of excellent quality. It is furthest advanced of any mine in its vicinity.

The Shaw Mine, underground, in the same locality, is about ready to raise ore. The Biwabic Company's Minnewas Mine, a mile or two to the south, should be able to load ten cars a day, from a steam shovel on the ore body, by July 1. The Great Northern, Bessemer, Commodore, and others near by, are making developments. All these lie directly to the south and east of the Missabe Mountain, from which H. W. Oliver is under contract to mine 200,000 tons this year, if he can get rail facilities, which is doubtful.

men who made their craft the subject of earnest and loving study. Of the result of their labors enough has happily survived to demonstrate what it is possible to accomplish in this line and to serve as a stimulant to the modern artistic faculty. In the great European museums, and to a limited extent in those of the United States, are preserved specimens of art work in iron which may inspire those who are unable to travel far a-field in order to study those examples of such work by masters in the art which still adorn many of the cities of the Old World. Books, too, are published which contain illustrations of the best iron work extant. So that for those who are striving toward the revival of this art there does exist enough material to help them largely in the accomplishment of this object.

Modern Work in Wrought Iron.

A revival of interest in the subject has, we are glad to note, undoubtedly sprung up within the last few years. Much more attention is now being paid to the production of objects in wrought iron in several parts of Europe. In Belgium, France, Germany and England an impetus has been given to this work, and the public taste is being educated to an appreciation of it which did not exist a few years ago; and the recent annual exhibition of the Architectural League of New York gave gratifying evidence that the United States is not falling behind in the procession. Hammered wrought iron as a

means of decoration is now an established feature of architectural work in this country.

The production of wrought-iron work, which is also work of art, appears to be receiving serious attention, and signs are not wanting that crass

appearance and satisfying to the cultivated taste, as the walls of the exhibition above referred to abundantly testified. There were there displayed some really beautiful examples of objects in hammered iron, designed and forged in the city of New York, which

plates, handles and other hardware, of thoroughly artistic spirit. The specimens were, it is true, somewhat limited in number and variety, but enough was manifest to demonstrate what can be done, and what is actually being done, by the few specialists who have as yet devoted themselves to this branch of handicraft in the United States, or more properly speaking, in the city of New York, for we believe we are correct in saying that all the exhibits were from New York City.

Individual Element in Wrought Iron.

Much of the beauty and charm of the old wrought metal fabrics is unquestionably due to the personal element which prevails in them. The devotion paid by the craftsman to his work is patent. Formerly a great part of the best work was carried out by individual artisans laboring at home at their own little forges. Much thought and effort of a patient, painstaking character were put by these men, mostly with but scant pecuniary reward, into the embodiment of their ideas in iron. And so we find they generally stamped an individuality into their work which was all their own. We are told that many of the valued relics of mediæval art in metal, which have come down to delight the modern eye and mind, represent the actual life labor of some devoted toiler, whose name has probably perished, although the work of his hands remains to serve as pattern and incentive to successive generations of artists who have become imbued with its spirit.

Such conditions of labor have been, however, for the most part entirely changed in these latter days. The introduction of the huge modern workshop with its complicated machinery and labor-saving devices has in a great measure eliminated the personal element from most industries. And with it has unfortunately gone a great part of the charm which envelops the handicraft of past centuries. Reproduction in infinite sequence has taken the place of individuality. Machinery to-day turns objects out to pattern by the thousand and the million without the intervention of the human hand.

In cast-iron work—although that, too, can be and is being made beautiful to a greater extent than has hitherto prevailed—this element of similarity militates against the attainment of any really high degree of artistic excellence. But in wrought iron, on the other hand, the personal element is predominant, and this constitutes its true charm and value. In this work we are, at any rate, not liable to meet the same pattern at each street corner. And then opportunity is given for much finer and more delicate work in the details of an object than would usually be obtainable from a mold.

Application to Modern Requirements.

In a word, wrought iron meets the artistic requirements of the present day to a more satisfactory extent than almost any other medium. It therefore merits a more careful consideration in connection with the decoration of our dwellings and the articles of our daily use than it has hitherto received. This consideration it happily now obtains, and in many of the latest triumphs of architectural skill which grace our cities the decorative work in wrought iron holds a prominent place. Witness the beautiful metal work in the shape of grilles, gates, screens, balconies or railings which adorn some of the most modern

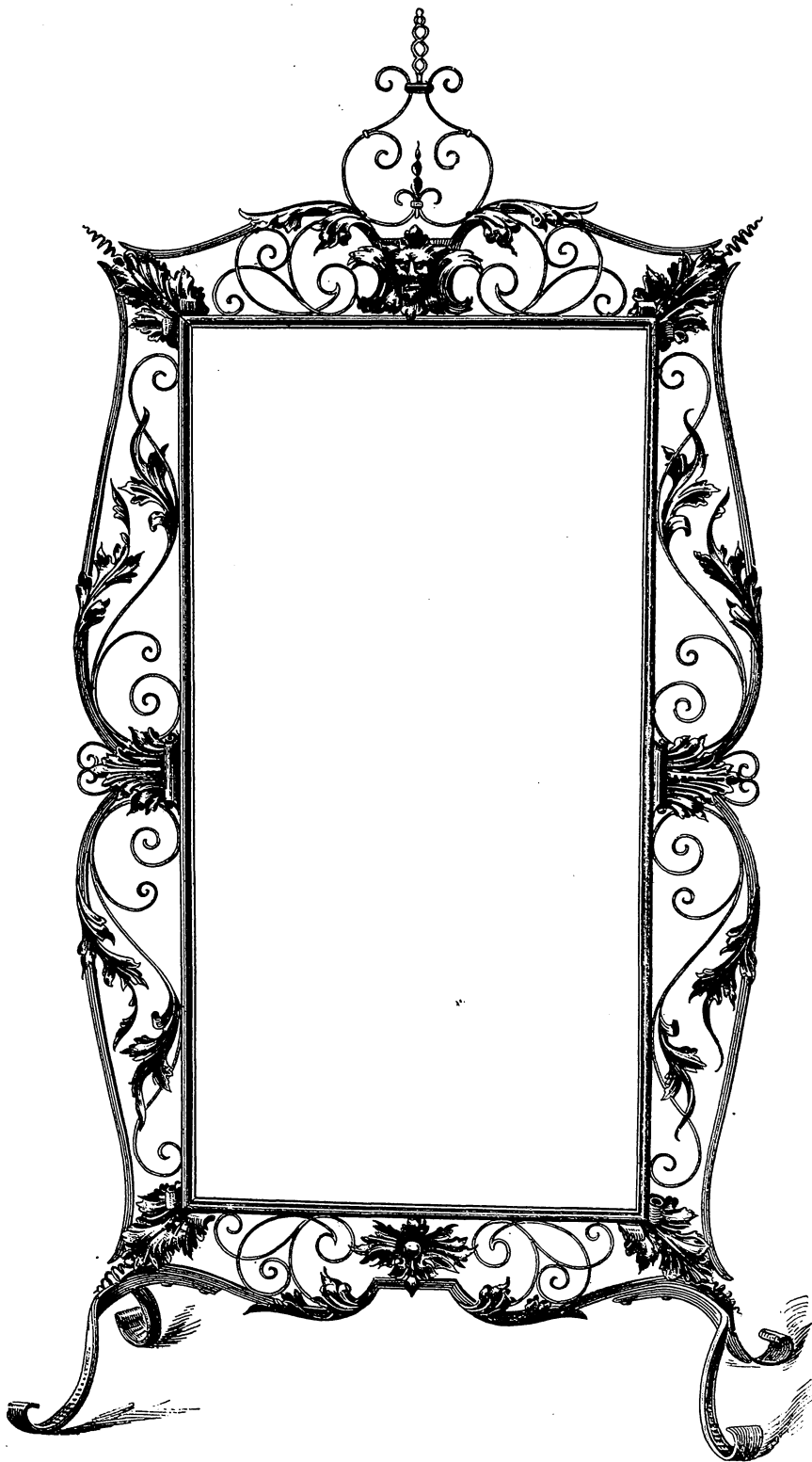


Fig. 2.—Wrought-Iron Screen.—Becker & Hammer, New York.

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utilitarianism is no longer to monopolize all our production in iron, architectural and domestic, as it has too long been allowed to do. Beauty and effect are beginning to be carefully studied in this line of work, and it is found possible to make articles of utility which are at the same time pleasing in

may compare favorably with much of the antique work, and which give promise of yet better things in the future. These included grilles, balconies, gates and other architectural objects, as well as such smaller articles of use and ornament as lamps, screens and irons, candelabra, and knockers, door

churches, business, residential and hotel buildings of New York City. The work is often costly, but the results obtained are so satisfactory that people are now more willing to pay for the labor it entails and the beautiful effects in decoration which wrought-iron work alone offers. All manner of design known can be reached by the artisan in this style of work, and architects of the modern school have not been slow to avail themselves of its help.

In the present articles it is proposed to give some idea of what has been and is now being done in the line of artistic wrought-iron work, more especially in the United States. A short sketch of the rise and progress of the craft will be offered, with some illustrations of the work of different periods. The various European styles will be touched upon and examples presented. Bringing the evolution of the wrought-iron art down to the present time, it is proposed to give some account of its present condition in this country. In connection with this subject will be given a number of illustrations of recent work done by American concerns, which, we believe, will be found to contain many of the best elements of artistic excellence, together with large promise for the future development of the art in this country?

Examples of American Work.

Those appended to this article present some examples of recent decorative wrought-iron work produced in New York, and are favorable specimens of what is being done to establish its reputation. In Fig. 1 is shown a wrought-iron balcony of Louis XIV style, made by John Williams, 544 West Twenty-seventh street, after the design of McKim, Mead & White, architects, of New York. It is one of three which adorn the New York State Building in the Columbian Exposition. The balcony was displayed at the last exhibition of the New York Architectural League, where it attracted great attention and received many encomiums.

Another object shown at the same exhibition was the beautiful screen, Fig. 2, designed and made by Becker & Hammer, 150 West Twenty-ninth street. A chaste and effective example of wrought-iron work, free from over-elaboration and yet striking and original, is represented by Fig. 3. This gate was designed by R. H. Robertson, architect, and forged in the shops of the Composite Iron Works, William R. Pitt, proprietor, and is now erected in the new Mohawk Building, New York City. Figs. 4 and 5 show respectively a decorated exterior gas lantern and a hall electric-light holder, both of which were designed and forged at the shops of John Williams. The dragon design of the latter is peculiarly spirited in conception and execution. It is composed entirely of hammered and chiseled iron. The gas bracket, it should be mentioned, is not the most favorable example of such work done in the same shops, for far more elaborate objects of this kind have been produced latterly by the same maker. The wrought-iron lamps at the entrance to the Century Club Building, New York, which have been much admired, were also designed and wrought by him.

Since last November there have been nearly 3000 tons of nickel armor delivered at the various navy yards and shipyards. This is nearly three times the amount of material which was furnished up to last November.

The Amalgamated Association.

The Wage Committee of the Amalgamated Association, composed of 31 persons representing lodges in various parts of the country, convened at the headquarters of the Amalgamated Association of Iron & Steel Workers at Pittsburgh on Friday the 2d inst. It is the duty of this committee to go over the recommendations of the various lodges concerning the wage scale and formulate a scale, which is then to be presented to the association in conference for consideration. As yet nothing

the manufacturers meet the workmen in conference, during the time the association is in convention. This proposition has been accepted as a wise one, as it is believed that by holding conferences before the association adjourns, much of the delay in arriving at a settlement of the wage scale will be avoided. Last year some 15 or 20 leading firms of Pittsburgh were represented in the conferences held, and it is probable that these same firms will be represented this year, with the exception of the Pittsburgh Forge & Iron Company, the J. Painter & Sons Company, and Phillips, Nimick & Co. These three concerns have not

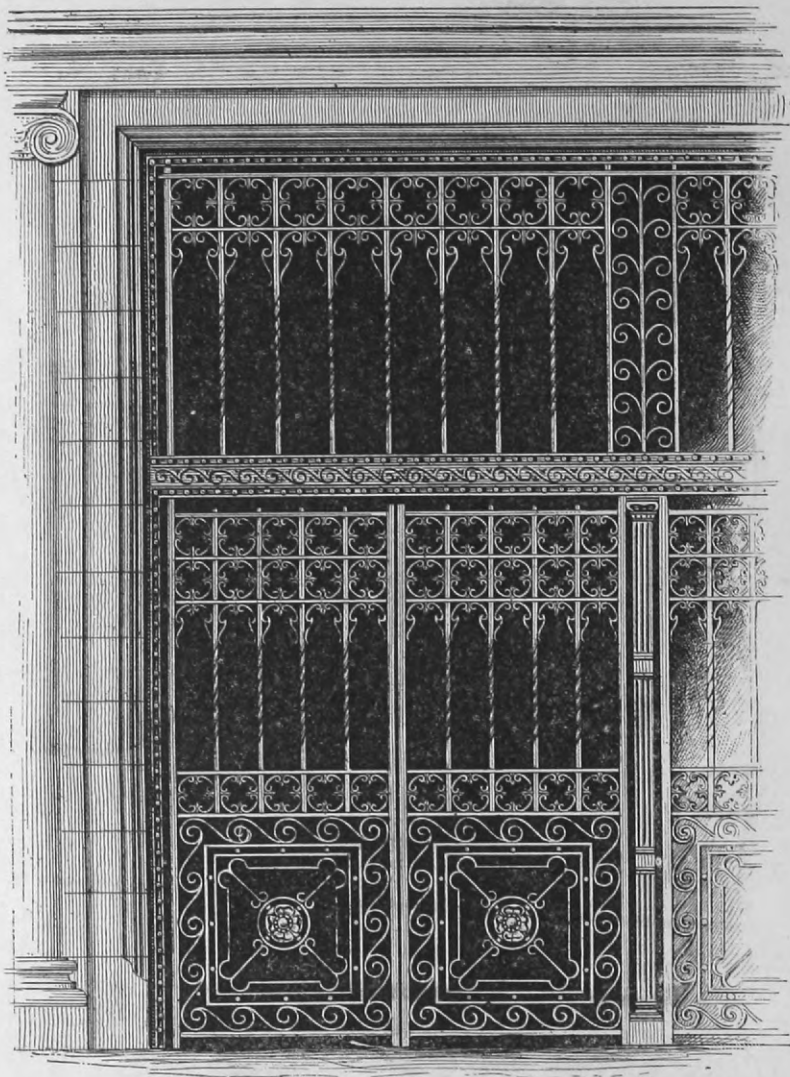


Fig. 3.—Wrought-Iron Gates, Mohawk Building.—Wm. R. Pitt, New York.

ARTISTIC WROUGHT IRON.

definite has been given out as to what recommendations have been made by the various lodges, but from several sources we have information that a scale based on \$5 per ton for boiling with probably slight reductions in finishing departments may be adopted by the association. The regular convention of the Amalgamated Association opened in Pittsburgh on Tuesday the 6th inst., and it is probable that within a few days the first meeting of the Conference Committees representing the manufacturers and the workmen will be held. As already announced, M. M. Garland, president of the Amalgamated Association, has requested Jas. McCutcheon of Lindsay & McCutcheon of the Star Iron Works, Allegheny, Pa., to have

as yet replied to the letter of Jas. McCutcheon, asking them to attend the conferences, and just what action they propose to take in the matter has not been disclosed. It will be remembered that after the wage scale was adopted last year the Pittsburgh Forge & Iron Company, through Frank E. Richardson, secretary, refused to abide by the settlement arrived at, and their plant was idle some days, the firm finally making private arrangements with their workmen. What lends strength to the supposition that a scale based on \$5 per ton will be adopted, is the fact that a number of non-union mills in the Pittsburgh district are understood to pay their workmen on the basis of \$5 per ton for boiling, and in order to put

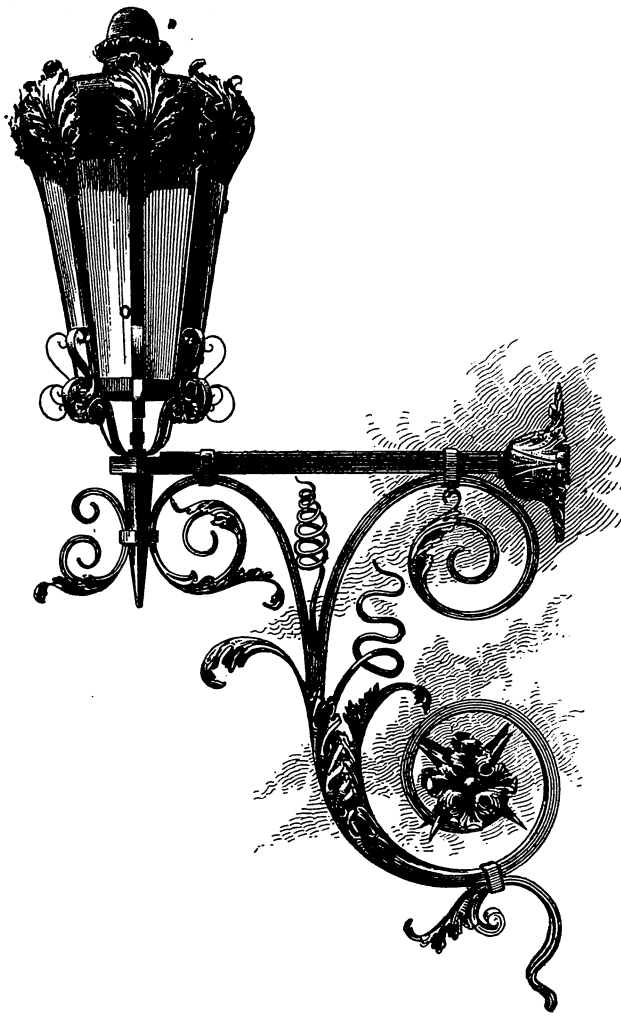


Fig. 4.—Gas Lamp in Wrought Iron.—John Williams.

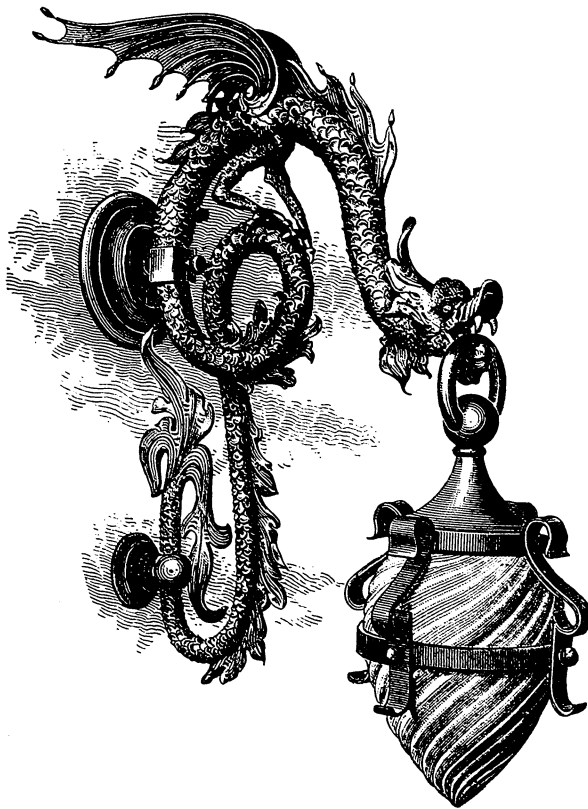


Fig. 5.—Electric Light Holder.—John Williams.

ARTISTIC WROUGHT IRON.

union mills on an equal basis it is the impression that such a scale will be offered. One manufacturer has expressed the opinion that a peaceable settlement of the wage scale could be arrived at if the Amalgamated Association would adopt a scale based on \$5 per ton for boiling, and allow the men to make six heats instead of five, as is now the case. This would increase wages some 10 per cent., and at the same time increase the output about 20 per cent. As most of the mills in Pittsburgh use high-class material for puddling, it is believed that the extra heat would not be seriously objected to by the workmen, in view of the fact that there would go with it an increase in wages. Definite information regarding the probability of a peaceful settlement of the wage scale governing the rolling mills will doubtless be forthcoming within the next week or ten days.

The Baden Natural Gas Company.

The report of the Master in the case of the American Tube & Iron Company of Youngstown, Ohio, and Middletown, Pa., against the Baden Natural Gas Company, Baden, Pa., were filed at Pittsburgh last week. The bill avers that the Baden Gas Company were incorporated in 1886, with a capital of \$500,000, and that, although the subscribers certified that 10 per cent. of this amount had been paid up, no part of the stock was ever paid. The plaintiffs secured a judgment some time ago for \$5,371.30, although they had a total claim of over \$12,000 against the defendant company.

The latter are insolvent and a decree is asked for to compel the payment of so much of the capital stock as will be necessary to pay the ascertained debts of the company and for the payment of the plaintiffs' claim. Mr. Woodward finds the following defendants to be liable for their original subscriptions:

J. Sharp McDonald, \$45,600; J. K. Dorrington, \$45,600; W. S. B. Hays, \$45,000; H. W. Weir, \$45,600; G. J. Grammar, \$34,200; J. J. Sizich, \$34,200; Charles H. McKee, \$22,800; W. G. Hunter, \$57,000; Thomas McClees, \$4,560; Thomas M. Jones \$4,560; John Werner, \$4,560; Charles H. McKee, in trust, \$111,800.

Of these subscribers, the bill has been dismissed as against Charles H. McKee, and the Master finds that it should be dismissed as against William Reed's estate, J. J. Speck, S. E. Gill, G. J. Grammar and J. J. Sizich, but should be sustained as to the others.

The total indebtedness of the defendant company is \$76,871.25.

A contract for 1,500,000 pounds of forgings for guns will soon be awarded by the Navy Department. It will supply ordnance for the "Iowa," the "Brooklyn," and the three gunboats. The plans for the latter vessels have just been drawn up and contemplate for the armament of those ships 24 guns. The forgings for which contracts will be made will furnish the service with 72 guns of calibers from 4 inch to 12 inch. There will be 4 12-inch guns, 16 8-inch guns, 12 5-inch, and 30 4-inch guns. The "Iowa" will be equipped with the 4 12-inch guns and 8 of the 8-inch rifles and 6 of the 4 inch. The "Brooklyn" will have an equal number of 8-inch guns and 12 5 inch guns. The remaining 24 4-inch guns will be distributed equally among the three gunboats.

Iron and Steel at the World's Columbian Exposition.

BY E. C. POTTER, CHICAGO.

II.

It is a curious and interesting study to attempt to fathom the mental processes of the exposition administration which led to the installation of the various exhibits of iron and steel. The Mining Building—the term “mining” here broadly includes metallurgy—is supposed to be the abiding place of the displays of the iron and steel industry, and here, indeed, are the majority of them found. Yet one is somewhat startled on entering the Transportation Building to discover the big Bethlehem hammer the most prominent object there. The connection between the monster hammer and modes of transportation seems remote and shadowy. Yet there must be some relationship apparent, at least to the administration, and hence discoverable by the inquisitive visitor. Thoughtful contemplation of the Bethlehem exhibit reveals it. As one examines massive armor plate and guns for war ships, crank shafts for steamships, rails for railways, &c., one realizes that the Bethlehem display is received primarily not as an example of steel metallurgy and a grand illustration of the achievements of one of America's master minds in this industry, but simply as an attribute to the great field of transportation, some of the material of which the Bethlehem Works manufacture. In other words, since Bethlehem makes crank shafts and armor plate for ships its exhibit is placed, not in the department of mining and metallurgy, but in the department of transportation. The method of reasoning that has led to this disposition seems to be rather strained and far-fetched, for by carrying out the same idea all steel manufacturers making railway material of any kind—and which of them do not?—would properly be brought under the department of transportation. By the same token, iron and steel material that enter into the construction of agricultural implements should be housed in the Agriculture Building, structural shapes would find a place in the Liberal Arts, &c. One does not wish to be hypercritical, yet it is a matter of real regret that all the iron and steel exhibits of every kind could not have been brought together under one department for the sake of convenience in finding them, for a more effective massing and contrast, and for the purpose of better comparison. As it is, one will never be sure of having seen them all. The writer has made a number of visits to the fair, and on nearly every occasion has stumbled upon an iron and steel exhibit in some unexpected and inappropriate place. But to return to the Bethlehem exhibit.

When the American people determined to have a navy worthy the country, how few of our citizens appreciated what the construction of a modern navy required in the way of material. In a vague sort of way it was understood that a warship was provided with armor plate and big guns. When one speaks of armor plate, a pretty thick piece of boiler iron presents itself to the mind; while a cannon is ineradicably associated with a field piece that officiates on the “Glorious Fourth.” When one is brought face to face with the huge plate of 17-inch armor and the 12-inch rifle

guns to realize that the construction of a navy is a good deal of a job. When the new navy was undertaken there did not exist in this country a steel plant capable of making these things. The Bethlehem Company's exhibit, therefore, appeals strongly to our national pride and patriotism, as we have here visible evidence that in a marvelously short time a plant and practice have been developed that yield us this material, which, according to the tests, is the best in the world. But even with these finished pieces in view one has but a faint conception of the task of fashioning these enormous masses of steel into the shapes we see. Towering above everything in the building rises the full-sized model of the largest steam hammer in the world. This is the famous Bethlehem 125 ton hammer. Adjacent to it is an enormous black block, 18 feet in height, 8 feet 6 inches in width and 52 inches in thickness, representing in wood the full size of a steel ingot weighing 251,688 pounds, from which the 17-inch armor plate is forged. It is to deal with such a block of steel as this that the hammer exists and under whose mighty blows the gigantic ingot gradually assumes the desired shape. Yet this is but a single step in the long and difficult process of making armor plate. Let one picture to himself the great plant of open-hearth furnaces in which the raw materials are refined and converted into the finest of steel; the huge cranes that, obedient to a touch, lift and move about these huge masses of metal; the enormous heating furnaces of sufficient size to receive the ingots and plates during the process of forging; the oil tempering, the annealing, and finally the finishing of the plate to bring it to its exact dimensions, which calls into play colossal planing and boring tools, any one of which would more than fill an ordinary machine shop. Every detail of this manufacture, its machinery and appliances, is Herculean, and it is indeed a veritable Titan who designed and created it all. What has been said of the plate is also true of the gun beside it. The various parts of which the gun is built up are well illustrated here—tube, breech hoops, trunnion ring, &c.—and especial interest attaches to these, as they are examples of one of the more recent developments in steel metallurgy—namely, forging by hydraulic pressure as a substitute for the blows of the giant hammer. Less cost of installation, simplicity and celerity of manipulation, and a greater effect upon the steel have recommended the forging press over the steam hammer, and for heavy work of this kind it is superseding the older machine. The hollow forged crank shafts displayed are magnificent examples of the work of the forging press of a more utilitarian character than the gun forgings.

On the floor, behind a steel crank shaft 67 feet long, utterly overshadowed by the colossi that surround it, lies a steel rail. Not one in 50 who inspect the Bethlehem exhibit ever see that rail, or if they do they give it a very slighting glance. A rail is fated to be the least appreciated of any of the steel products. It is eminently prosaic in appearance, and in place on the railway line it is the most insignificant of all the railway appliances. Yet that rail represents the most important branch of the iron and steel industry. The tonnage of rails made per annum is larger than that of any other steel product. The plant required for its manufacture is the most expensive and complex for that of any known commodity. The

highest mechanical and metallurgical skill is taxed in its successful production. Each step in its manufacture is subjected to the most careful scrutiny and chemical examination, and rigorous tests and inspection are applied to it; and with reason, for more human lives are daily hazarded upon the integrity of a rail than upon any other one production of human art and skill. It is the most expensive item in railway construction and maintenance. The speed and comfort of travel are more largely influenced by the rail than any other feature of railway equipment; hence the very reputation of a railway is largely referable to the condition of its rails. To the initiated, then, the insignificant rail is clothed with a significance that will entitle it to hold its head high amid its aristocratic surroundings of armor plate and big guns.

Treasury Decisions.

Drawback on Cartridges.

TREASURY DEPARTMENT, }
April 18, 1893. }

SIR: The department is in receipt of your letter of the 7th inst., further in relation to the testing of specimens of cartridges exported for drawback under the provisions of article 39 of the regulations of November 15, 1890.

You inquire to whom you shall send specimens to be assayed, as no provision appears to have been made for such service at your port.

In reply, you are informed that the testing of samples contemplated by said paragraph need not be repeated at each exportation of cartridges manufactured by the same firm, unless there is reason to suspect a change in the quantity of imported lead used, as shown by assays made on previous entries, in which case, as well as in the case of a first exportation of cartridges manufactured by some other firm, samples may be transmitted through the department to the appraiser at New York, who will be instructed to cause an assay of the same.

It is understood that no other cartridges are now being exported from your port than those manufactured by the Winchester Repeating Arms Company, samples of which have been recently assayed and analyzed at New York, and found to contain exactly the quantities of imported lead stated by the manufacturers, without any admixture of tin. Respectfully yours,

CHARLES S. HAMLIN,

Assistant Secretary.

COLLECTOR OF CUSTOMS, New Haven, Conn.

Drawback on Steel Rails Manufactured by the Maryland Steel Company.

TREASURY DEPARTMENT, }
April 24, 1893. }

SIR: On the exportation of steel rails manufactured by the Maryland Steel Company of Sparrow Point, Md., wholly from imported iron ore and spiegeleisen, a drawback will be allowed equal in amount to the duty paid on the imported material used in the manufacture, less the legal retention of 1 per cent.

The drawback entry must specify the total length and the total weight of the rails to be exported thereunder and the respective quantities of ore and spiegeleisen used in their manufacture.

As the rails are of uniform weight per lineal yard no official weighing of the same shall be required; but the statement in the entry as to the total length

and weight shall be verified by an official count and measurement and a computation based upon the number of yards so ascertained and the known uniform weight per yard.

The statement in the entry as to the respective quantities of ore and spiegel-eisen used in the manufacture shall be verified by an official inspection of the company's records of manufacture, which must be at all times open to such inspection.

Respectfully yours,

CHARLES S. HAMLIN,

Assistant Secretary.

COLLECTOR OF CUSTOMS, Baltimore, Md.

Chrome Iron.

Before the United States General appraisers at New York, March 24, 1893. In the matter of the protest 35285½ a-18340,

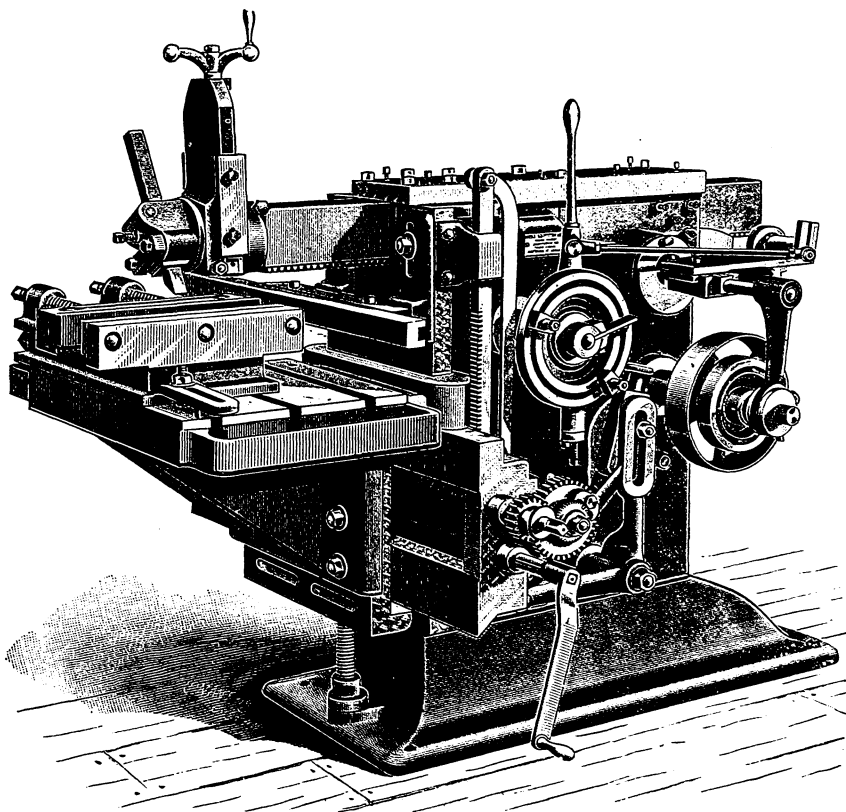
The Morton Draw-Cut Shaping Machine.

In Machinery Hall annex, Section 28, Column K-45, is exhibited a 24-inch metal shaping machine, which is attracting considerable attention from visitors, and more especially from those who are familiar with mechanical matters and are, therefore, capable of appreciating its exceptional performance as to capacity and the decidedly unique method of operation. If standing idle, the machine presents a very ordinary appearance, and would probably be passed without notice; but in operation attention is at once arrested by the depth of cut and size of chips which are noiselessly rolled off from a solid slab of cast iron upon which it is operating, the width of which, or length of

machine; and that it will be greatest toward the outer end of the stroke; also that even with a very slight amount of lost motion in each of the several sliding bearings required to give the necessary movements for feed and adjustment by pushing the parts away from each other, there must result a very considerable aggregate. These two causes combined produce an unavoidable "give," under the thrust of the tool, which increases in proportion as the cut and feed are increased until a limit is reached beyond which the effect would be injurious to both the machine and the work; and this must, therefore, be considered the limit of capacity of the machine.

Regarding the effect of the cut on the head and its sliding bearings, the strain being one of compression entirely, would appear at first glance to be in favor of rigidity and smooth working. By analysis, however, it is clear that the combined spring and lost motion of the parts must cause a proportionate downward vibration and consequent depression of the tool point, the effect of which is to allow it to dig into the metal and thus produce an additional strain and corresponding increase of depression, which beyond a certain limit must prove disastrous. These points cannot be considered as defects of any particular make of machine. They are inherent in any type of shaper in which the work is supported by an overhung table, and in which the cutting is done by the forward stroke of the head. Neither do they prevent such machines from doing the ordinary work of a shaper in a perfectly satisfactory manner, provided the limit of their capacity is not exceeded. But from the fact that such limit exists it is a recognized and accepted condition by both makers and users of this class of tools, and it would be hard to imagine that so slight a change as that of reversing the direction of cut could have so great an effect on the limit of capacity, even in the same machine changed only as to the tool-holding device, to enable it to pull instead of push. And yet a very little consideration will make it evident that it is a case of cause and effect in which the former is by no means abstruse. With regard to the table and its several parts it is evident that they are drawn the direction of their greatest resistance, and that the strain is one of compression, which is supported by the heavy body of the machine, which is perfectly rigid. This eliminates entirely the springing of the metal, while the lost motion is practically *nil* in this direction. Considering the strains on tool, head, &c., the tendency of the vibration due to combined spring and lost motion is outward, and, therefore, instead of depressing the point it is elevated, and the effect, if appreciable, is to lighten and relieve the depth of cut so that digging into the metal is impossible.

As the Morton shaper is made reversible—i. e., to cut on either the pushing or pulling stroke—a comparison of the effects is very easily made, which is a correct gauge of the relative capacity of cut by the two motions. Practically, it amounts to about two to one in favor of the drawing cut. There are many advantages in the manipulation, due to cutting from, instead of toward, the operator. As it is impossible to see the end of the work next to the machine, it is necessary that any profile lines, or other laying out, be made on the outer end; and as the edges, even with the less brittle metals, will break away as the tool runs out, the lines or other marks disappear before the finishing



THE MORTON "DRAW-CUT" SHAPING MACHINE.

and 41448 a-24893, of Crocker Brothers, against the decision of the Collector of Customs at New York as to the rate and amount of duties chargeable on certain chrome iron, imported per "Servia" July 6, 1892, (?) and "St. Ronans" October 29, 1892. Opinion by Wilkinson, General Appraiser.

The merchandise is an alloy of iron and chromium known as chrome iron, imported in lumps contained in casks. It was valued at nearly \$150 a ton. Duty was assessed upon it as an unwrought metal at 20 per cent. under paragraph 202, N. T., and it is claimed to be dutiable at three tenths of a cent a pound as pig iron or spiegeleisen, under paragraph 134.

We find that the merchandise is neither pig iron nor spiegeleisen, and we hold that it was correctly assessed with duty.

The protests are overruled accordingly.

Miniature steel fortresses for topmasts are said to have the approval of French naval authorities and are a suitable adjunct for machine guns.

cut, is about 24 inches. The perpendicular depth of cut is not less than 1½ inches, while the chips, owing to the angularity of edge of the tool, are about 1½ inches wide, the pitch of feed being ⅜ inch. Although the metal is of ordinary quality of foundry iron, which by the usual method of planing would break up into short chips, those made by this machine are veritable shavings, being curled up into tight cylindrical spirals of five or six turns, which will bear considerable rough usage without breaking. While, of course, this is partly due to the correct form of cutting edge of the tool, it is mainly attributable to the steadiness of motion of the cut and the entire absence of chatter or vibration, caused by the pulling or drawing cut, which is the distinctive characteristic of the machine.

In considering the effect of the working strains caused by the forward or pushing cut, it is obvious that the springing of the work and the table upon which it is supported will be proportionate to the comparative rigidity of construction of this portion of the

cut is started, and they are then practically useless as a guide, except as to gauging the roughing cuts. But where the tool enters the work at the other end, cutting toward the lines, there can be no breaking away of the edges, and the lines remain visible and intact for guiding the finishing cut.

From the accompanying illustration the Morton machine is seen to be somewhat similar in its general design to the ordinary modern type of geared shaper. The difference is mainly in such details as refer especially to its reversible and "universal" character. The cored or box housing is heavily ribbed internally in the direction of working strains, which, in addition to its deep section, render it perfectly rigid under the heaviest cut. The ram is a heavy square bar of steel, which is hollow from end to end, the central portion being chambered to leave an internal bearing at each end. The ends are also provided with short external cylindrical bearings for the reception of the heads and various attachments. The driving rack is double, and is cut in the solid metal, while between the two is placed a heavy bar of bronze to furnish the bottom bearing. The ram is provided with the necessary adjustable gibs for taking up lost motion.

In the head the principal peculiarity is in the tool holder, the apron of which is hung so as to swing inward or toward the head for clearance, on the return stroke, while its outward motion is checked by the yoke bar bolted to the head, as shown in the cut. Where it is desired to use the machine in the ordinary manner for the forward cut, this head is quickly removed, and one of ordinary construction substituted. The table—its vertical and cross slides, gib adjustments and feeds—is made very heavy and with large bearing surfaces. In general features it is similar to the ordinary design, except that it is provided with a detachable stop or butt ing piece, bearing on the vertical face of the housing, against which the work is placed, in order to relieve the table entirely from all lateral strain of the cut, and transfer it directly to the body of the machine. The details of driving and feeding mechanism need not be specially described. The former consists of a pair of friction pulleys, whose engagement and release, regulating the length of stroke and position of head, are actuated by the shifter, the adjustment of which is readily made while the machine is in motion. The pulleys are driven, respectively, by open and crossed belts, that for the return stroke being of twice the diameter of the other driving the cut. All necessary feed adjustments are made without stopping the machine, as there is no motion except at the instant of reversal. By removing the head, a bar fitted to the internal bearings of the ram may be used for outside work requiring a circular feed, the latter device being placed at the back end of the ram. It is also provided with a dial, by means of which any variety of index work may be done. The bar attachment may be used for any form of inside or outside work, for which it may be found more convenient than the regular head.

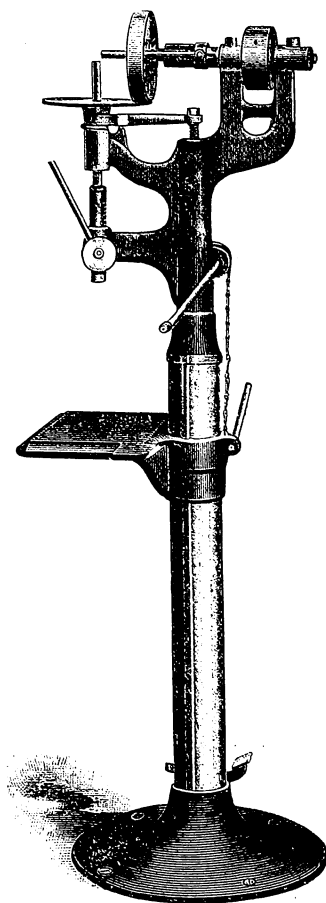
In reversing the operation from backward to forward cut, in addition to changing the head, the only operations necessary are the reversals of drive and feed. The latter is accomplished by simply slacking the hand nut on the pin and sliding the latter to the opposite side of the center in the slot of the disk. The reversal of the shifters is made by the use of a double rack de-

vice, not visible in the cut. These changes are very simple, and can be quickly made.

The machine, throughout, is well made, all essentials of materials and workmanship being of the best, although no attempt at super-extra finish has been made. The makers state that in a recent test to ascertain the maximum capacity of their 36 inch machine a cut was taken across the face of a 28-inch slab of cast iron, the perpendicular depth of which (the cut) was 2 inches, and the feed $\frac{1}{16}$ inch. This was accomplished without any apparent straining of the machine and in a perfectly smooth and quiet manner. With a 24-inch machine a bar of ordinary merchant bar iron, 24 inches long, was reduced from $2\frac{1}{2}$ to $\frac{1}{4}$ inch thickness in two cuts, feed not stated. The machines are built and exhibited by the Morton Mfg. Company of Muskegon Heights, Mich.

The Stover Friction Drill.

The principal feature of this drill, which is made by the Stover Novelty Works, Freeport, Ill., is that the power



The Stover Friction Drill.

is greatest when the speed is slow and large drills are used, and most sensitive for small drills under high speed. This is accomplished by means of a disk on top of the drill spindle, which is driven by frictional contact with a pulley carried by the driving shaft. This pulley can be moved toward or from the spindle, thereby regulating the speed and power of the drill. The speed can be changed from its maximum to minimum with one hand while holding the work with the other. By a slight motion of the foot on the treadle, which separates the disk and pulley, the machine can be quickly started or stopped. It will

drill from 0 to $\frac{1}{8}$ inch, and to the center of a 10-inch circle. The greatest height from the base of the drill to the spindle is $46\frac{1}{2}$ inches and from the platen to the spindle 35 inches. The spindle is $\frac{3}{4}$ inch in diameter and has a vertical motion of $3\frac{1}{2}$ inches. The machine weighs 170 pounds.

The German Enameled Ware Trust.

Albert H. Washburn, commercial agent at Magdeburg, sends to the Treasury Department the following account of a new German trust, published in the Consular Reports:

The depressed state of an overstocked market during the past two or three years has recently led to the formation of a trust by German manufacturers of enameled sheet iron. The avowed object of the combine is to prevent overproduction by regulating the output upon the home market. Incidentally a scale of prices, rebates and other charges are agreed upon. No attempt is to be made for the present to control the sale of exported wares, even when sold to German buyers.

The principle upon which the new association will operate is to measure future production by the general average of past sales, with due regard to any extraordinary conditions that may arise. Thus it is supposed that the total production for 1893 will represent the average of domestic sales for the years 1890, 1891 and 1892, reckoning from January 1 to December 31. A provisional plan was adopted to this end. A committee named for the purpose collected the figures for the years mentioned and computed the average for the present year. The exact quantity to be produced by each factory was then apportioned in general meeting.

It is not proposed to effect sales through the central agency. Every firm secure their own orders, as heretofore, and are responsible for the carrying out of their contracts. Prices and rebates are for the most part constant. The only exception is where a firm are not producing the prescribed quantity through lack of orders. If this continues for a period exceeding a month, the president of the trust is authorized to permit a scale of lower prices until the limit of production has been reached. One firm are permitted to take over the orders of another, but no firms thus uniting may exceed their combined quota. If, at the end of the year, certain works have failed to produce their allotted quantity, they are to be reimbursed for the difference at the rate of 10 marks per 100 kg. by those firms overproducing. This is adjusted through the central bureau. Works partially or wholly ceasing operations are not entitled to remuneration for the time so lost.

Certain checks are imposed. Pending a permanent arrangement, a committee was appointed to establish the correctness of the figures reported. Whenever a decrease in sales is ascertained, a corresponding decrease in quota is promptly ordered. Each firm is required to forward semi-monthly to the central office a statement of actual shipments. Statistical summaries based upon these reports are to be published every two weeks for the information of members of the association. After a more complete organization has been effected, the directors of the various groups making up the trust are to hold quarterly sessions to fix, with the aid of the published statistics, the production for the succeeding quarter. In this

manner every firm will be enabled to estimate with some exactness the quantity it is entitled to put upon the market.

The trust is made up of the manufacturers in Rhenish Westphalia, Saxony, and southern, northern, eastern and central Germany. Thus far about 30 works are included. Affairs are directed through a president in charge of the central office, the general meeting of members and the directors of groups. The president and vice-president are elected for one year, and the former presides at all general and group deliberations. One vote represents an annual shipment of 100 tons or a fraction thereof, but no establishment is entitled to more than five votes. Guarantee deposits at the rate of 20 marks per ton are required to be made with

in operation on 7 miles of double tracked road, and the service is said to be exceedingly satisfactory to the public. The company operating the road have obtained concessions for a considerable extension of the system covering a number of the principal streets in the twin cities.

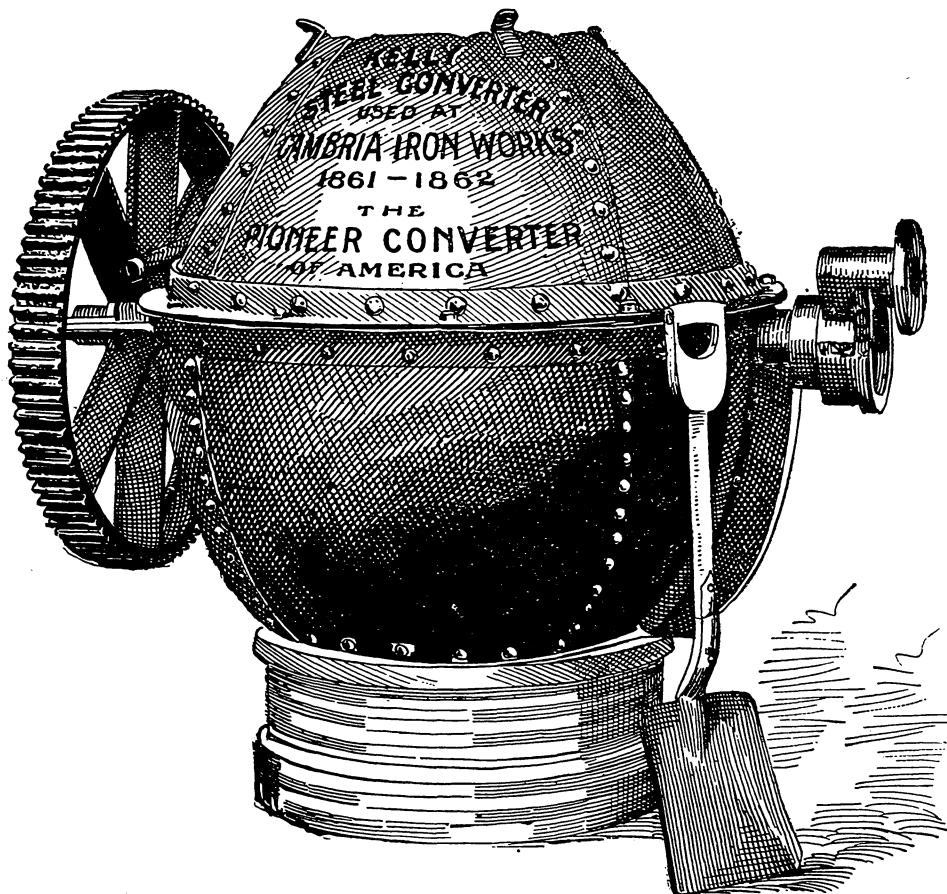
The Kelly Converter.

An illustration is herewith given of the original Kelly converter used at the Cambria Iron Works, Johnstown, Pa., in 1861-62, as it now appears in the exhibit of the Cambria Iron Company, Mines and Mining Building, World's Fair, Chicago. The old relic attracts a great deal of interest, particularly among iron workers, who seem to have little

Cupolas—Their Construction and Management.*

BY W. J. KEEP, DETROIT, MICH.

Many years ago we measured every cupola of any importance in Troy and Albany, and in many other cities, and learned the shape of the lining when first put in. We procured a record of charges, blast, speed of melting, &c., and tabulated the results, expecting to discover some general correct principles of construction and management, but on the contrary found nothing to show that any shape or kind of management could not be equaled by others. A cupola with a foundry full of piece workers is not a profitable thing to experiment with. If you hear of a melter



the central office by each firm. In case of failure to comply within four weeks with an order to pay made in accordance with the terms of the agreement, the amount involved is drawn from the fund of the defaulting firm. The security must be replaced within two weeks. The trust compact expires December 31, 1895, until which time no detail can be changed without unanimous consent. Members bind themselves not to erect new works or interest themselves in firms outside of the trust.

The association is to devise means to prevent goods intended for export finding their way to the home market. Each group is to establish a central depot for the sale of damaged wares. The principal office is located at Berlin, and the president—Dr. H. Claus of Thale—is a successful inventor of various new enameling processes.

The Siemens-Halske electric street railway system, which was introduced into Buda-Pesth three years ago, is now

love for the device which they characterize as the "infernal machine which has knocked out the puddlers."

The double-turreted coast defense steamer "Monterey" on her trial at San Francisco tested her boilers up to an average of from 134 to 145 pounds during the run without sign of weakness or leakage. Her speed averaged 12.3 knots per hour.

London is supplied with water by eight private corporations furnishing daily, to a population of 5,578,745, about 212,000,000 gallons, or 38 gallons *per capita*. Fifty-three per cent. of this supply is from the river Thames, 32 from the river Lea, and 15 per cent. from springs and wells. The water of the Thames and Lea is passed through 106 filters, with an aggregate surface of 108½ acres; the total storage capacity of reservoirs being 1,560,000,000 gallons.

that can do better than your own, it is better to borrow him for a couple of weeks to remedy your defects, and you can then imitate his management. A few years ago the Michigan Stove Company hired a melter from Mr. Smyser to increase the rapidity of their melting, and we have retained the shapes for our cupolas which we adopted at that time.

We shall confine our remarks to cupolas from which the iron is caught by the men who use it, and who carry it away as fast as it is melted.

Size.

Small foundries may need a cupola of small capacity, but if there is any chance of the business growing, it is better to have the outside diameter about 6 feet, and if necessary line it smaller for a few years.

A 6-foot cupola ought to deliver a constant stream without stopping dur-

*A paper read before the Chicago Convention of the National Association of Stove Manufacturers.

ing the heat that will give a line of men all that they will want to do to take care of the iron. This would fill a 40-pound ladle every six seconds, and would melt from 10 to 11 tons per hour.

As it is difficult to gauge the stream, it is more general to fill from 75 to 150 ladles in five seconds each, and then stop up for a couple of minutes. The rule should be to give the iron as fast as the men can take it away and return for another dip.

The most economical foundry is one employing enough men to take about 16 tons of iron delivered from a 6-foot cupola in from one and a half to one and three quarter hours.

Shape.

This is not the same for coke as for coal. The tuyeres for coal are often from 5 to 7 inches above the sand bottom, while for coke the distance should be from 14 to 18 inches. It is necessary, therefore, to determine the fuel before procuring a cupola. Equally good results are obtained with a cupola perfectly straight on the inside as with other shapes.

The rule in blast-furnace construction is to allow the lining to burn into any form that it chooses to take, and the next time to line the furnace with the same lines. This is a good rule if we wish to experiment with a cupola at all.

When the bottom is dropped it will be found that the melting point is within 2 feet of the tuyeres, and that the lining has burned away considerably at that point. The slag will be built out above the tuyeres by the chilling action of the blast. It is customary to chip away this slag and patch the sides. This does little good, as the daubing melts off in a few moments after the blast is on.

If only the deepest holes are mended and the slag is allowed to remain and is daubed with fire clay, in a few days a bosh will form and the lining will cease to burn away.

If the result is an improvement the same shape can be retained when the cupola is relined. There will be no trouble about having a clean drop. The melting point is held in the center so far away from the walls that they are not heated nearly as much as with straight sides.

A 4-inch lining above the melting point will last a long time. This gives much more room for iron than a 9-inch lining, and therefore hastens melting. The bosh is above the tuyeres, and if you began with a 9-inch lining and a straight cupola, and have let the cupola shape itself, you will have worked a bosh in 6 inches over and beyond the tuyeres, and will have worked the lining above the bosh to 4½ inches thick. The inside diameter above the bosh will be 62 inches. The bosh at the narrowest point is 42 inches, and the diameter below the tuyeres will be 56 inches. The sand bottom will be 7 inches thick, and from this to the tuyeres will be about 18 inches. The tuyere opening will be 5 inches high. From the top of the tuyere for 12 inches the lining will slope inward to the narrowest opening of the bosh. The lining will then gradually expand for 20 inches until a 4½-inch wall is reached.

The heat after leaving the melting point is absorbed by the fuel and iron above it, and the higher the charging door the better.

A charging door on each side is convenient, allowing fuel and scrap to be charged on one side and iron and sprues

on the other. The height of the stack will depend on the neighborhood. A high stack will carry the gases above the surrounding houses. It is difficult to construct a netting that will arrest the sparks or that will last.

Below the tuyeres, above the bosh and above the charging doors, flanges should be riveted to the shell, so that any section of the lining can be removed at any time without disturbing any other part.

Bricks costing from \$12 to \$20 last nearly as well as those costing twice as much, though they are not quite as large.

Blast and Tuyeres.

Probably the preference would be for a positive blast. It will start off at about 10 ounces, and, as the cupola clogs up, will run up to 14 or 15 ounces. An increase of the blast above this will amount to the melting of about 1 ton additional per hour for each ounce increased, though some have had a different experience.

The piping from the blower to the cupola should be large, with very large curves, if any are necessary. The large pipe, say 18 inches diameter, acts as a reservoir, and if long, two cupolas may be driven with one positive blower, which would be expected to drive only one. A large water gauge should be attached to each cupola in such a way that the figures can be seen 25 feet away. The one that we use has a reservoir underground holding 3 gallons, and is made of 3-inch gas pipe, with a copper float. It has required no attention for eight years. The wind should enter a bustle at three sides. The bustle should be large and should extend all around the cupola, and should contain eight or ten large doors easily opened. The tuyeres should be about 4 inches high and 7 inches wide, with at least 16 in a circle, and enough to make a continuous line would be better.

Two or more rows of small tuyeres above this have found advocates, but after use for a short time they are generally abandoned, and as good results are obtained without them.

Charges.

The bed of coke must be deep enough to hold the pig iron about 1 foot above the tuyeres when it begins to melt. Enough fuel must be added at each charge to replenish the bed and keep the iron at the melting point. There exist various opinions regarding the size of charges. Some use large charges with as good results as others using smaller ones. It would seem, however, that small charges of fuel at short intervals would replenish the bed more uniformly, and only so much iron can be added as these additions of fuel will melt. In such a cupola as we have described 1700 pounds of coke would be used as a bed. About 4000 pounds of iron would be put on, followed by 300 pounds of coke, which will occupy about 5 inches in depth. This will melt at least 3000 pounds of iron, which will occupy about 9 inches depth. Toward the end, as the cupola becomes hot, the coke charge may be decreased slightly. If a large number of charges are to be made, after the sixteenth the coke may be 275 pounds and the last two charges may be 200 pounds.

Rapid Melting.

The smaller the amount of fuel used to keep the iron hot the faster will be the melting, for if there be more fuel than is necessary to melt the iron, it must burn away before the next iron can get down to the melting point. If it is found that it is necessary to stop

up often, it may be well to try and take 10 pounds of coke from each charge. If that hastens melting and the iron is still hot enough, after a few days take off another 10 pounds, but go very cautiously with any change. The general practice is exactly the opposite. Whatever happens the melter will add more coke and thus make the melting still slower. Breaking the iron in pieces of about 25 pounds causes the iron to melt faster, and uniform charging, so as not to allow the blast to work through faster at one point than at another, is very important.

Slagging.

If the heats are less than 16 tons, and especially if the sprues are milled, the slag that will accumulate will be needed to properly protect from the blast the drops of iron as they pass down to the hearth. If the sprues are charged with the sand on, or if the heats are over 20 tons, a slag hole must be provided a little below the tuyeres, and after about 15 tons have been taken out the slag should be tapped.

Fluxes.

To make the slag fluid enough to run out of the slag hole, limestone or fluor-spar must be added. The latter is expensive, and, to say the least, gives no better results than limestone. Our experience has led us to consider limestone the best, irrespective of cost.

About 40 pounds to the ton of iron is sufficient. It should be broken a little smaller than an egg. The limestone should be taken from the outcrop or surface of the quarry, and will be white and brittle. That further down is hard and dark colored and makes a thick black slag. When large heats are made, and the cupolas are slagged, it is quite customary to charge sprues with the sand on them.

It is a question whether it is cheaper to melt the sand off or to mill the sprues. In large foundries making from 25 to 30 tons of sprues it is quite a serious matter to mill them, and necessitates two extra handlings. It is then probably better to add lime and flux away the sand.

Dull Iron.

In charging cupolas it is usual to add a few hundred pounds more iron than the molders call for. It is not well to run too close, as when the blast gets through the last charge the iron is likely to be dull. If, unfortunately, the iron runs short, scrap plate must be thrown in at the last end without fuel, and is almost sure to come out dull. If dull iron should occur in the middle of the heat, add a little more fuel next day to the charge that runs dull, though such dull iron generally results from a mistake in charging. It must result from a mistake in weighing the fuel or the iron, or from the iron hanging up, and later on falling down below the melting point. Inferior coke may cause dull iron, but this is a very unusual cause, though the fuel invariably gets the blame.

Quality of Iron.

It is generally supposed that the best iron comes down at the first part of the heat, but the reverse is true. As the cupola gets hotter the quality of the iron improves, and any special work, such as patterns, should be poured near the last end, or when about two-thirds through. If a little white iron comes out at first, charge a hundred or two of silvery iron on the bed next day, which will correct the evil. By regulating the mixture properly, the first and last ladle are practically as good as any other ladle of iron for any work.

Iron and Steel Institute.

The English newspapers which have just come to hand contain a full account of the meeting held in May, at which E. Windsor Richards of Lowmoor was elected president of the Institute, and as such delivered an address. Brief dispatches through the Associated Press created the impression in this country that the burden of Mr. Richards' paper was an hysterical lament over the decline of the British iron and steel trade. The full text now at hand fails to justify the earlier summary. It deals with a number of interesting commercial and technical questions, among which are the supply of ore in Spain; a description of a modern blast-furnace plant in Wales; some data concerning the cold-blast furnace recently erected at Lowmoor to take the place of the older stack; a description of the methods of manufacturing iron at the famous establishment of which Mr. Richards is the head, and a review of progress in Bessemer practice in which data are given concerning the achievements under the management of W. W. Scranton, at the mill he was in charge of until the consolidation. We take from Mr. Richards' address the following paragraphs as covering some of the subjects in which American iron manufacturers will be more particularly interested:

President Richards' Address.

One characteristic of the iron industry of the past year has been the great falling off in the quantity of pig iron made from English ores. The imports from Spain during 1892 amounted to 3,750,000 tons, equal to a production of 1,800,000 tons of pig iron. The total quantity of pig iron made in this country in that year was 6,616,890 tons, so that 26 per cent. of the whole production was made from imported ores. It is remarkable how all the principal iron-making districts have of late years increased their consumption of imported ores and reduced the use of home ores. In Scotland the make of well-known brands of Scotch foundry iron has been largely reduced from year to year, until now more than 24 per cent. of the production is obtained from foreign ores. South Wales has practically ceased raising ironstone and depends almost entirely on foreign supplies. Cleveland has immense quantities of phosphoric ironstone at its door, cheaply won, but 20 per cent. of its total make of pig iron comes from ores carried more than a thousand miles. Even Lancashire and Cumberland, with hematite ores of the highest quality close at hand, have of late years extended their use of Spanish ores. Is it possible for the north of Spain, which in 1892 supplied us with 3,250,000 tons of ore, to maintain that output for a much further length of time? It is generally thought that the most valuable and extensive deposits are being rapidly exhausted, and that some of the most productive mines are not likely to last more than a few years longer.

Bilbao Spathic Ore.

Last month I visited Bilbao, and made careful inquiries among competent authorities on the spot, and learned that with the exception of the large mines owned by the Orconera and Franco-Belge Companies, there are no very extensive mines left to be worked. Indeed, were it not for the recent successful calcination of the spathic ores which underlie the Rubio ore the duration of

the district, at the present rate of output, 4,000,000 tons per annum, would have been within measurable distance, but there are very large deposits of spathic ore, the depth and extent being as yet unproved. Calcining operations in the near future will be largely carried on, making the spathic ore, which in the raw state contains 43 per cent. of iron and 25 per cent. carbonic acid, give in the calcined condition 58 per cent. of iron, thus making a very valuable mineral, having only 2 per cent. of moisture as received. Calcining kilns are already erected, one large kiln economically and effectually calcining 1500 tons of raw ore weekly. It seems probable that this successful dealing with the spathic deposit will extend the life of the district fully ten years. It must be understood, however, that this length of life does not apply to the Orconera and Franco-Belge properties. There are large deposits of ores free from phosphorus in the neighborhood of Seville and in the south of Spain that will become available, but considerable sums of English money will have to be expended in opening out the mines and conveying the mineral to the ship; but, in the words of Mr. Gill of the Orconera Company, who has seen all the recently discovered large deposits, "there is as yet only one Bilbao." Under these circumstances, it is natural that our attention should be arrested by the inquiry whether, if the Spanish supplies were to be suddenly cut off, we could depend wholly on our home mines? The West Coast has raised 2,750,000 tons of ore free from phosphorus, and could most probably increase that quantity to produce 1,500,000 tons of pig iron, should the demand arise. During the 12 months ending December, 1892, the quantity of basic steel made in England was 406,839 tons, of which 108,056 tons were open-hearth steel. In Germany and Luxemburg 2,013,484 tons of steel were made from phosphoric ores, of which quantity 186,252 tons were open-hearth, the balance being basic Bessemer steel. Very much more prejudice has existed in England than on the part of Continental buyers against the use of steel made by the basic process. This seems only natural, when no difficulty existed here in procuring ores free from phosphorus, and, in the event of foreign supplies being cut off, such prejudice would doubtless quickly disappear. There need, therefore, be no apprehension of our being able to supply all the iron and steel we may be called upon to produce. Indeed, the great trouble seems to be that of being able to procure sufficient work to keep our large establishments employed. We could quickly make ourselves independent of foreign supplies of ores, except in the manufacture of high percentages of manganese in spiegeleisen and ferromanganese, and in this respect we are entirely dependent on foreign countries, the English spathic ores not being rich enough to give above 10 per cent. manganese in spiegel.

Blast Furnace Practice.

In England we have been obliged to be content with such outputs per furnace as the usual complement of men can fairly deal with; indeed, there has been no inducement to increase production, for the blast-furnace power of the country is far in advance of the demand for pig iron, so that our attention has been more directed to economical working than to large yields. Bolckow, Vaughan & Co., Eston, in a plant erected in 1877, with a 50 per cent. ore

make 1000 tons of hot-blast pig iron per week, with 19 hundredweight of coke, in a furnace of the following dimensions: Hight, 72 feet; bosh, 23 feet diameter, having an angle of 72°; throat, 15 feet diameter; bell, 11 feet; crucible, 10 feet; Cowper stoves of sufficient capacity to give red-hot blast at daylight; number of tuyeres, 6; diameter of muzzles, 5½; pressure of blast, 5½ pounds. The total cost of labor per ton of pig iron is below 2 shillings and 6 pence; this includes everything connected with the handling of all materials for the making and the removal of the pig iron. When we consider that the whole of the ore, coke and limestone, amounting to about 3500 tons per week, is handled by two men charging the blast furnace, we must admit that it does not seem probable that this labor cost can be appreciably reduced. The greater portion of the iron made is conveyed in a molten condition, which, after passing through a "mixer," is taken direct to the Bessemer converter. At the Dowlais Company's new works at Cardiff, Edward P. Martin has attained a production of upward of 1400 tons per week, using the usual Rubio ore, and with rather less than 20 hundredweight of coke per ton of pig iron, 70 per cent. of the output being No. 1 quality. The furnace is 75 feet high; bosh, 20 feet, having an angle of 78°; throat, 15 feet 6 inches; bell, 11 feet; crucible, 10 feet; Cowper stoves, giving an average temperature of 1300° F.; number of tuyeres, 7; diameter of muzzles, 5 inches; pressure of blast, 5½ pounds. One pair of compound condensing blast engines is attached to each furnace, having high pressure steam cylinders of 36 inches diameter, and low-pressure cylinders 64 inches diameter, with air cylinders 88 inches diameter, all of them 5 feet stroke; number of revolutions per minute 23, giving 19,000 cubic feet of air at atmospheric pressure per minute. Each pair of engines is separately connected to the blast furnace. There has been no attempt made to drive the furnace up to a production requiring any increase in the number of men usually employed, so that the results are very satisfactory, and the labor cost as low as that before mentioned.

Handling Pig Iron in the Cast House.

With such a large production of pig iron, all of which is allowed to become cold on the beds, some difficulty in clearing away the metal was experienced, so an apparatus was devised for dealing with the removal and breaking up of the pig iron by mechanical means, to clear the beds quickly, to reduce the cost of labor, and, above all, to dispense with a difficult and exacting class of workmen, which at any moment has the power, and sometimes exercises it, of bringing the works to a stop. This apparatus consists of quick-running overhead steam traveling cranes, which sweep the whole surface of the pig beds. The breaker is fixed at the far end of the line of furnaces, and when the whole of the four blast furnaces are completed, a second breaker will be placed at the other end. It is important that the pigs should be molded at quite equal distances apart, and means are devised for insuring this, so that the three fixed hammers on the hydraulic rams may exactly suit the distances of three pigs. The beds, being thus molded, are cast in groups of 30 pigs. The group is not meddled with in any way till it has become cool.

The overhead crane then picks up the whole group of 30 pigs, and runs with it at a high speed to the breaker, depositing it on a light four-wheeled carriage running on an incline toward the breaker, thus enabling the workmen to push forward easily the loaded carriage. On arrival, the group is drawn forward by a pawl of sufficient length of stroke to place the group of pigs under the hydraulic ram, which, at one stroke, breaks three pigs, though only one at a time, the sow being broken by a second ram. The four pieces of broken pig slide down a strong chute into a railway wagon, the detached sand falling between the bars forming the chute. One machine can readily deal in this way with 4000 tons of pig iron weekly, working only from eight to ten hours daily. The operations are all conducted by young men of ordinary physique, and the whole cost of carrying away the iron, breaking the pigs, &c., is covered by a charge of 1½ pence per ton. Among other advantages is the easy stocking of the pig iron, owing to the group system of casting, the fresh fractures from the breaker showing the quality of the iron, no matter how much it may have become rusted, while the rapid clearing of the pig beds by the traveling cranes enables the furnaceman to do all the molding required for the night by daylight; at the same time the group system is attended by absence of scrap in the beds, and greatly reduces Sunday work.

One of the leading features of the meeting, following the reading of the president's address, was the presentation of the Bessemer medal to John Fritz of Bethlehem, in whose absence it was received by Sir Lowthian Bell.

"The Elimination of Sulphur from Iron and Steel" was the leading topic of discussion of the meeting. There were presented three papers, one by James E. Stead, Middlesborough, entitled, "The Elimination of Sulphur from Iron;" another by E. H. Saniter, Wigan, on "A New Process for Desulphurizing Iron and Steel," to which was appended a report by George J. Snelus on "The Saniter Desulphurizing Process." We shall deal with this subject, summarizing the results, in an early issue.

The other topics which came up for consideration were a paper on the "Recording Pyrometer," by Prof. W. C. Roberts-Austen, and "Notes on Puddling Iron," by John Head. There were taken as read a paper "On the Determination of Chromium in Ferro-Chromium," by William Galbraith, and "On Methods of Determining Chromium, with Notes on the Distribution of Chromium in British Irons," by J. E. Stead.

The business of Coxe Bros. & Co., it is announced, will soon be turned over to an incorporated company of the same name. This corporation will be chartered for the purpose of carrying on a mining business. Another corporation will be the Coxe Iron Mfg. Company, which will carry on a manufacturing business.

Negro labor on the coffee plantations is so much demoralized that the Government desires to engage the services of 100,000 Chinamen for a term of years and will agree to give them necessary protection. What Chinamen have done to make the sugar plantations of Hawaii productive can be done for the coffee plantations of Brazil. Californians are well aware of the value of this kind of labor.

THE WEEK.

The Austro-Hungarian Government announces that an international exhibition will be held in Buda-Pesth in 1896, to commemorate the 1000th anniversary of the foundation of Hungary.

A letter from Berlin says that the uncertain issue of the military question is checking business, and among some there is nervousness about the steadiness of the gold standard, irrespective of the fact that without the adoption of bimetalism in England it is impossible in Germany.

Henry Clews tells an unwelcome truth to many who subscribe for his weekly circular when he speaks of the numerous industrial companies incorporated "ostensibly to reduce expenses, really to enable their promoters to capitalize sluggish manufacturing plants at four times their value and then sell out at twice their value." The original parties doubtless took care in good season to "stand from under," but their successors are in the position of those who contemplate a pricked balloon.

Italians vie with Chinamen in sending away gold from this country. An Italian banker testified before the Senate Committee on Immigration, in session in this city, that the Italians send home annually \$30,000,000.

The proposed East River bridge will probably cost between \$25,000,000 and \$30,000,000, according to the testimony given before the Commissioners by George B. Cornell, the engineer of the company.

Peace is restored in Nicaragua by the success of the revolutionists and trade is resumed.

A duplicate cable between Mexico and Peru, over 2500 miles in length, was manufactured in London and laid within the short space of ten months from the time the order was given.

An inquiry making at Washington into the expediency of reducing the number of custom house districts brings out the fact that there are about a score in which the cost of collecting a single dollar ranges from \$50 as high as \$500. St. Augustine and Cedar Keys in Florida have almost ceased to exist as commercial ports.

A heavy break in the price of wheat at Chicago resulted from the failure of the Plankinton Bank, and report says that the heavy clique who have been so long holding grain on a margin will be compelled to move out enormous amounts. When the grain market reaches its level more animation will be imparted to general trade.

The Pacific Mail Steamship Company lost money last year, and, since the expiration of their contract with the Panama Railroad Company, are shut out from participation in business between New York and American ports on the Pacific.

United States Minister Denby reports that the Chinese land telegraph line has been joined to the Russian system, and that messages can now be sent to any part of the world from any station in China, at the rate of \$2 a word, the cost of transmission across the Atlantic being added. The only Chinese province which cannot now be reached by telegraph is Hunan, which still remains opposed to all foreign innovations. The service is reported as rapid and satisfactory.

A model workshop for the manual training school at Brookline, Mass., is about to be erected at a cost of \$30,000. The building will be 150 x 170 feet in size, modeled after an old English schoolhouse and be equipped with a 15-horse motor, foundry, forge room, machine tool room and lathes.

The Minister of Public Works in Manitoba promises for next autumn a phenomenal wheat harvest.

Sixty-seven miles of wire fence incloses a tract in the Adirondacks where Dr. Seward Webb will cultivate forestry on scientific principles, with able assistants.

Canadian shipbuilders are doing very little, almost all vessels, great and small, being built on the Clyde.

The packing of kerosene in inferior cans results in leakage, and other merchandise is liable to serious damage.

It appears most likely that no attempt will be made to enforce the Chinese exclusion law until some modification can be made by the next Congress, the object in regulating foreign intercourse being to encourage trade rather than to extirpate it.

The official statistics show that the total pork packing industry in the West last winter comprised 4,633,000 hogs, which is the smallest for the season in 22 years.

The next thing is to lay a cable between California and Hawaii, on the route surveyed by United States vessels and which is pronounced entirely feasible. A line from British Columbia is talked about.

Farmers in Great Britain are suffering greatly through the failure of the hay and root crops and the compulsory cessation of seeding operations, due to the extraordinarily prolonged drought, lasting 80 days. An unusually large number of bankruptcies in the agricultural districts is reported in consequence. The distress is enhanced by the low prices of cereals, which are considerably below those obtained in the corresponding period of last year.

Capitalists who are interested in Westchester property are earnestly considering the plan for a six-track road on the viaduct plan between New York and Peekskill, to be built wholly of steel. Steel cars could make the trip in one hour. The cost of construction will be something over \$35,000,000, and the cost of the right of way will more than double those figures.

The valuation of real estate in New York has been increased \$163,000,000 over the assessment of last year, which is almost 11 per cent. Taxpayers will squirm.

Japan coal can be delivered in San Francisco at \$7.50 per ton, including freight and duty, and an American firm is said to have contracted for a large quantity, beginning with 100,000 tons per annum.

The Massachusetts Legislature is again laboring to build a ship canal across Cape Cod. Year after year the commonwealth has granted to companies the right to construct a canal at Buzzard's Bay, but although considerable sums of money have been expended in surveys and work the canal has never materialized. The acceptance of the charter should be accompanied by a forfeiture, to be lost to the corporation unless it can be shown that the equivalent of the entire capital stock has been expended in the work of construction.

The Iron Age

New York, Thursday, June 8, 1893.

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RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - BUSINESS MANAGER.

The Greatest Wealth Producers.

Manufacturers and business men who having the management of concerns employing large bodies of men have frequent cause for exasperation at the sentimental views held by well-meaning but poorly-informed persons. Professional men are conspicuous sinners in this direction. It is therefore particularly refreshing to meet with a clear exposition of the fallacy so popular and so pernicious in its effects that the wealthy minority are really in some way retaining for themselves an undue share of the fruits of the labor of the great majority. W. H. Mallock, in the June number of the *North American Review*, puts forward the proposition and backs it with an able argument, asserting "that in all modern countries—in such, at least, as have been enriched by modern industrial progress—a minority produces more wealth than the majority; that it produces the entire wealth of the richer classes, and a part, that is yearly larger, of the wealth of the poorer classes; and that so far are the few from being the plunderers of the many, that the many, economically speaking, are the mere pensioners of the few."

Mr. Mallock is far from making such a plea for those who have become possessors of riches by capturing money from others, but he does take that ground in behalf of the creators of wealth, to whom it has come as the reward of ability. He calls attention to the fundamental distinction between the two great forces which, in the modern world, produce wealth, labor and ability and offers the following definitions: "Labor is the industrial exertion of a single man on some single piece of work, and on that single piece of work only." "Ability is the industrial exertion of a single man, which affects simultaneously the labor of many men, multiplying or improving the results of it in each case."

We believe that it is true that the reward for the services to the community has been far smaller in proportion to those services in the case of the men of ability than it has been to labor. There will occur to every one familiar with our industrial and commercial development instances in which the accumulations of the individual represent only an insignificant fraction of the wealth created by his work. That is true of the inventor and the man who develops his inventions. It holds good for the great captains of industry and for the manu-

facturers who improve and cheapen their product. It is the case for the business men who open new channels of distribution or render existing methods safer or more effective. Mr. Mallock classifies these creators of wealth as the men who possess the inventive ability, or the ability of enterprise. They are the natural monopoly of a small and distinct class. He points out how the ability of one man is, in productive power, out of proportion to the labor of one man, and that it may, without any greater effort being involved, produce results which are a thousand times as great.

There are probably two leading reasons why the rewards reaped by men of industrial ability are popularly so often deemed out of proportion to the services rendered. The one is that too many measure work by the amount of effort which it costs instead of making the results achieved the basis of comparison. The other is that with the creators of wealth their share of the possessions is very much in evidence, while that part which has accrued to the community is so much diffused that it escapes attention and never arouses interest or scrutiny.

It is on record that Sir Henry Bessemer, who possesses in a remarkable degree the rare combination of inventive ability and the ability of enterprise, realized from his steel process royalties aggregating £1,057,748, or nearly \$5,000,000. That certainly is a large sum, and yet it is utterly insignificant when compared with the material benefits which the whole civilized world has reaped from his genius.

We are far from joining in a plea in behalf of the rich men of our modern development, but it is time that a protest be raised against the indiscriminate arraignment of wealth producers as men who have cleverly robbed the toiling masses of the lion's share of their reward of labor. Those among them who are creators of wealth, far beyond their own participation in it, are entitled to and should receive credit for the possession of those rarest and most productive gifts, ability and enterprise.

Uneasiness Among Stove Molders.

The prospect of a stove molders' strike is now looming up as another disturbing element in iron circles. Protracted conferences have been held between representatives of the manufacturers and the workmen, covering a period of several months. The gravity of the situation is shown by the consideration of this question at two general meetings of the stove manufacturers, both held in Chicago, one in March and the other last week. At both of these meetings the sentiment of manufacturers was practically unanimous against granting an advance. The recent meeting was marked by a very unusual occurrence, not only in the stove trade but in any branch of industry. The General Executive Committee of the Iron Molders' Union of

North America had been invited to attend and to state their case to the assembled manufacturers. They did so in a series of speeches which won hearty tributes to their ability from the manufacturers, who were, however, not to be convinced by mere eloquence against the dictates of prudence and commercial sagacity. While the molders had originally made a demand for an advance of 15 per cent., it developed that they were not determined to adhere tenaciously to this rate, but would have been willing to accept 10 per cent. They argued that the past two or three years had been very good years for the stove trade; that business had been unusually active and presumably prosperous, but that the molders had received no share of the prosperity save regular employment, while, especially in the West, the cost of living had advanced, thus really reducing their net earnings.

The answer of the manufacturers to the plea of the workmen was precisely what might have been expected in the present condition of general business. With banks failing, money growing scarce, collections hard to make, and other indications of trouble in the business world, they could but reply that an advance in wages was out of the question. Molders' wages are not low, taking a general view of the labor field, and the men should be well satisfied that no attempt is being made to reduce them. It was conceded by the molders that an advance in wages could not be made without a corresponding advance in the selling price of stoves. Animated by the usual confidence of non-business men, they asserted very cheerfully that this was an easy matter to do if all the manufacturers stood together. They lost sight of the fact that an attempt to advance stove prices would be deeply resented by merchants and consumers at a time when all other goods are becoming cheaper. As wheat is now selling at a lower rate than for over 30 years, farmers could not be asked to pay more for stoves.

With the hopefulness abounding in the breasts of those who are always sure of their wages at the end of the week, the molders refuse to attach much importance to the unsettled financial conditions of the country. They have no notes falling due which must be paid or otherwise taken care of, they have no heavy bills for material and little cash in sight to meet them, they have no employees expecting their regular pay on Saturday night, and they spend no anxious moments waiting to hear from shaky customers who must be carried a little longer.

And yet some of them are in a position to know how difficult it is to raise money for enterprises which in ordinary times readily command capital. A molder of great prominence and influence in the trade can be cited who has but recently had an experience of this kind. It is claimed, however, that the rank and file and not the

leaders are clamorous for an advance in wages, and that they will not listen to further excuses, but will insist upon fighting out the issue according to the usages of organized labor if their wishes are wholly ignored. This may be strictly true, but on the other hand there is some ground for the belief that the persistent effort of the molders to secure an advance in wages, notwithstanding repeated refusals by the manufacturers, is to head off any movement in the direction of a reduction.

If there ever was a juncture in business affairs when it seemed necessary to prune costs in every direction and prepare for hard times it is with us now, and the molders know it. The agitation for an advance was begun when times were good, and may now be continued for defense when times are bad.

As the second great assemblage of the stove trade has again emphatically pronounced against an advance in molders' wages, the relations of the manufacturers and their employees are now strained. The representatives of the union may have a lingering hope of a concession to be obtained in some way which will appease their followers, but the outlook is now very much in favor of a strike in the union stove foundries. How far such a strike may affect mixed and non-union foundries it is, of course, difficult to tell. The probabilities are that in most of these there will also be a strike. It was the case with the machinery and jobbing foundries in Chicago this spring. Union and non-union molders then acted together, and they will probably do so in the stove foundries.

The stove manufacturers appear to be quite unconcerned over the prospect of a strike. In fact, the opinion is freely expressed among them that the stove trade this year would be benefited and not injured if all the foundries were to be shut down for 60 days or more. Some of the manufacturers may not have as much stock made up as they would like to see in their warehouses at this time of the year, but arrangements could doubtless be made by which regular trade would be provided for. The molders are deplorably deceiving themselves if they think that the manufacturers will weaken merely because this is usually the time of the year when they push work in the stove foundries to their utmost capacity.

One of the main buildings of the J. B. & J. M. Cornell Iron Works in this city, located near Eleventh avenue and Twenty-fifth street, New York, was burned down on Friday morning. The fire began in the finishing room, and spread furiously. The loss was estimated at \$600,000, which may be too large. The building was full of valuable machinery—punching, drilling and sawing machines, and the rolling mills, one of which cost \$75,000. One of the punching machines cost \$40,000. There is also a heavy loss on patterns and on a two years' stock of structural iron which was on hand. This is the busy season, and the fire throws about 500 men out of work.

CORRESPONDENCE.

Pneumatic Caissons for Building Foundations.

To the Editor: In the very exhaustive article which appeared in the May 25 number of *The Iron Age*, relative to the foundations now being carried on for the new Manhattan Life Insurance Building, 64, 66 and 68 Broadway, the writer was misinformed when he states that the entire credit of the employment of the pneumatic caissons belonged to C. O. Brown, president of the Riverside Bridge & Iron Works. Mr. Brown's position was consulting engineer for the iron and steel structural work. The suggestion as to the use of a caisson came from this office, and was the outcome of the cylinder caisson used at the Fifth Avenue Theater by Mr. Kimball. In that instance, also, Mr. Brown manufactured the caisson, but from suggestions made by Mr. Kimball. We are indebted to Mr. Charles Longsmith for the application of these caissons to meet our requirements. Very respectfully yours,
KIMBALL & THOMPSON.
NEW YORK, June 2, 1893.

OBITUARY.

OSCAR MILLER.

Oscar Miller of Champaign, Ill., died on May 14. Mr. Miller had been ill with typhoid fever for several weeks. Mr. Miller was born in Jefferson, Ky., January 20, 1860. In February, 1883, he bought out the hardware business of his brother, J. S. Miller, at Champaign, and began business for himself. It is said that he had no means whatever and gave his personal note as security for the payment of the debt. He devoted himself zealously to his business and prospered from the start.

JOSHUA HENDRICKS.

Joshua Hendricks of the metal firm of Hendricks Brothers, 49 Cliff street, died suddenly in New York City Saturday evening, at his home, 512 Fifth avenue. Mr. Hendricks belonged to one of the oldest and most prominent Hebrew families in New York. He was 61 years of age. The business house of Hendricks Brothers, which is one of the largest of its kind in this country, was established in 1764 and has been in the family through four generations. Mr. Hendricks was widely known. He had been a member of the Chamber of Commerce for many years, and at one time he was vice-president of the German-American Bank. He also belonged to the American Geographical Society. A widow and three sons survive him.

A number of railroad officials were in Youngstown, Ohio, one day last week for the purpose of examining what is known as the Daniels corrugated steel railroad tie, invented by Robert E. Daniels, of Youngstown, Ohio. A stretch of track along the Lake Shore & Michigan Southern Railroad in that city was laid with these ties some time ago, where 1600 cars pass over them daily. At the examination made last week it is claimed that these ties were in perfect condition. An engine weighing 118 tons was run over the track, and the deflection of the ties was stated to be less than $\frac{1}{4}$ inch. The officials present seemed to be highly pleased with the result of the tests.

The Iron Industry of New York and New Jersey.

Dr. Sweet of Philadelphia, the expert of the census office, has issued a statement dealing with the iron and steel industries of New York and New Jersey.

Notwithstanding a net decrease of 20 in the number of blast furnace stacks in New York in the last decade the production of pig iron was larger in 1890 than in 1880. The total production in 1890 was 344,339 net tons, valued at \$5,182,606, against 313,368 tons in 1880, valued at \$6,697,349, and other products valued at \$118,892. The quantity of charcoal pig iron produced in 1890 (all hot blast) was 15,949 tons, against 17,017 tons of hot blast and 4470 tons of cold blast iron in 1880. Of all anthracite pig iron, 35,922 tons were made in 1890, against 173,032 tons in 1880. The quantity of iron made with a mixed fuel of anthracite coal and coke in 1890 amounted to 175,839 tons, and with coke alone, 116,629 tons. In 1880 there were 118,849 tons made with a mixed fuel, and none with coke alone.

The production of pig iron in New Jersey has made no advance during the past decade, although there is a gratifying increase in the manufacture of spiegeleisen, all of which is made from zinc residuum. The quantity of spiegeleisen made in this State in 1890 was 11,555 net tons, against 3392 tons in 1880. The total quantity of pig iron, including spiegeleisen, made in New Jersey in 1890 was 145,040 tons, valued at \$2,228,724, against 157,414 tons in 1880, valued at \$3,410,663, and other products valued at \$18,084. Of these quantities 29,452 tons were produced in 1890, with anthracite coal alone as fuel, against 116,523 tons in 1880, and 115,588 tons were made in 1890 with a mixed fuel of anthracite coal and coke, against 40,891 tons produced with a mixed fuel in 1880. It will be seen that New Jersey as well as New York has shown a large increase in the quantity of pig iron made with a mixed fuel and a great decrease in the quantity made with anthracite alone. The tonnage of coke consumed in New Jersey, however, does not show a very large increase in the 10 years, for the reason that the furnaces in this State which used a mixed fuel generally employ only a small proportion of coke in the mixture.

The manufacture of rolled iron and steel in New York has remained practically stationary during the past decade. From 1880 to 1890 12 rolling mills or steel works in this State have been abandoned and during the same period four establishments have been built, making a net decrease in the ten years of eight establishments. The decrease in the aggregate value of finished products from \$13,924,622 in 1880 to \$10,310,088 in 1890 is mainly due to the lower selling price of the various articles in 1890, brought about by improved processes of manufacture and lower cost of materials consumed. The total tonnage of products in 1890 (240,026 tons) was slightly below the quantity reported in 1880 (253,214 tons), the decrease being wholly in iron products. The manufacture of Bessemer steel rails was an important branch of the iron and steel industries of New York in 1880, but since 1889 the Bessemer steel produced in this State has been sold in forms other than rails.

The decade from 1880 to 1890 has been marked by considerable development in New Jersey in the manufacture of finished forms of iron and steel.

This State rolled no Bessemer steel in 1880, and only a small quantity of open-hearth steel. In 1890 (157,276 tons in 1890, against 82,617 tons in 1880) there is to be noted not only an increase in the aggregate tonnage, but the output of all kinds of steel was over 40 per cent. of the total quantity and nearly 50 per cent. of the total value of all products.

The total cost of all the materials consumed by the rolling mills and steel works in New York in 1890 was \$5,932,461, against \$8,264,186 in 1880. The principal materials consumed in 1890 were pig iron, including spiegel-eisen, 207,754 net tons, costing \$3,229,661; iron ore, 28,057 tons, costing \$103,768; scrap iron, 33,234 tons, costing \$671,105; scrap steel, 15,521 tons, costing \$318,043; purchased Bessemer and open-hearth steel, 8727 tons, costing \$287,646; anthracite coal, 16,700 tons, costing \$66,756, and bituminous coal, 228,839 tons, costing \$572,806.

The total cost of all the materials consumed in the New Jersey rolling mills and steel works in 1890 was \$5,326,401, against \$3,914,970 in 1880. The principal materials consumed were pig iron and spiegeleisen, 75,211 tons, costing \$1,054,777; iron ore, 26,257 tons, costing \$145,920; scrap iron, 25,590 tons, costing \$499,240; scrap steel, 16,702 tons, costing \$347,101; purchased Bessemer and open-hearth steel, 33,610 tons, costing \$1,078,390; anthracite coal, 92,869 tons, costing \$228,190, and bituminous coal, 173,216 tons, costing \$524,219.

In 1890 there were employed in New York 5291 hands to whom \$2,672,454 were paid in wages, while in New Jersey the number was 4498 who received \$2,301,592 in wages.

The first meeting of the Conference Committee representing the National Union of Finishers and the manufacturers of the Mahoning Valley was held in the Jewell Block, Youngstown, Ohio, on Saturday, the 3d inst. The following firms were represented at the meeting in person: Union Iron & Steel Company; Mahoning Valley Iron Company; the Andrews Brothers Company; Brown-Bonnell Iron Company, and the Sharon Iron Company, Limited. The meeting organized by electing Myron C. Wick of the Union Iron & Steel Company, chairman, and Jas. H. Nutt, secretary for the manufacturers, and P. J. Mundie for the finishers. The finishers asked that the present rate of wages be paid during the coming scale year, but the manufacturers refused this claim, stating that a readjustment of wages paid on certain sizes was necessary. The attitude taken by the manufacturers was somewhat of a surprise to the workmen, and after a discussion lasting several hours the meeting adjourned, to reconvene at the call of Messrs. Nutt and Mundie.

An official consular report to the department at Washington states that 6,000,000 bushels of corn have been imported into Mexico from the United States within the last 18 months, averting many deaths from famine among the poorer classes. Texas railroads received about \$1,324,000 for hauling this corn to the border.

The new armored battle ship "Massachusetts," the second vessel of her class, will be capable of throwing three tons of projectiles at a single discharge.

Canadian Notes.

The Ontario Government reserved until the end of the session the disclosure of its attitude in regard to the various proposals that had been submitted for the encouragement of mining and derivative industries within the province. It then announced through the Minister of Crown Lands that the conditions did not appear to warrant any assistance in the form of bounties or the building at any point of customs smelters at the public expense. It considered that enough had been done in this direction by the Canadian Government, which imposes a duty of \$4 per ton on imported pig iron, and pays a bounty of \$2 per ton to domestic producers. The granting of financial assistance to corporations that had applied for it on the strength of their proposals to start blast furnaces would not be justified, the Government held, by any assurances of success that were in the power of the companies to give. One other reason for refusing a subsidy to an iron industry was the desire of the Government not to place itself in the position of a competitor against private enterprise. But the Government was willing to give indirect aid to the development of our mines, and brought in a resolution granting a subsidy of \$3000 a mile to the Irondale, Bancroft & Ottawa Railway Company, to the Ottawa, Arnprior & Parry Sound Railway Company, to the Kingston, Napanee & Western Railway Company, and \$2000 a mile to the Central Counties Railway Company. Most of these companies' lines have their interior terminus in mineral districts. It was considered better thus to impart utility to some of our waste cre lands in the north, and in this way induce private capital to essay their development. The resolution was carried.

It cannot be denied that the greatest good of the greatest number calls for a reduction in some of our iron duties. But among the advocates of reduction there are some manufacturers who are thereby pushing other interests than those of the greatest number. Our manufacturers of agricultural implements have gone through the process of evolution that a protective tariff usually tends to determine. They prospered under the 35 per cent. duty until they became numerous and had to sacrifice profits. Failures followed, and prepared the way for combination, which duly ensued. Now the capacity of our big manufacturers of agricultural implements has outgrown the consuming caliber of the country, and to keep on growing it requires new markets. This gives a motive to the manufacturers in question for seeking a reduction on bar iron, &c., that they may cheapen production and thus become eligible to compete for an export trade against the producers of other countries. In other words, while they retain internal protection in the form of high duties, they want external protection by way of lower duties.

The Toronto agents of importers of British pig iron are not busying themselves very greatly this season in pursuit of orders for that material. They say that the pressure of competition from the United States makes business both too small and unprofitable for it to be worth much trouble, and that this year's imports from Scotland and England will be lower than ever. Some consumers here, notably the Doty En-

gine Works Company, claim that the quality and price of American brands suitable for their purposes are better than in British brands they have heretofore used. The company named above bought in Glasgow all the iron they imported up to this year. Our Canadian pig, which, by the way, is coming into wider consumption, needs to be mixed, and a suitable complement for the production of close, strong castings is found in certain brands of American which blend well, particularly with Londonderry iron.

The manufacturers of Canadian pig iron at New Glasgow and Londonderry, in Nova Scotia, need the duty to pay the freight on shipments sent as far west as Toronto. The duty is \$4 per net ton, or \$4.48 per long ton. The freight is \$4.70 and \$4.90 respectively from the points named. That is, pig iron shipped from Tonawanda and Buffalo to Toronto, though it has to pay the duty, is at little disadvantage by comparison with pig iron made in our own country, at Londonderry or New Glasgow. The inland freight on British iron is also so much less than that on domestic iron that the duty in favor of the latter is quite half neutralized by the greater cost of transportation to this point. Summerlee iron sells at 70 cents less, delivered at Montreal, this year than it did last.

Metal merchants find it hard to make sales this year ahead of immediate requirements. It is true there are not the same close limits upon production in the iron industries as there are in some of the other industries and trades, but manufacturers of implements, machinery, &c., do not venture out on the scale of production that they operated on a year ago. Their hand-to-mouth buying is restricted also by the instability of the metal market, in which it seems impossible for any advance to be long lived. Further, there is a scarcity of money outside of the banks, and the banks give little encouragement this year to any great expansion in production or credit business. Both the chances and the means, therefore, appear to be wanting for speculative buying of stocks of material. Consumers of tin here appear to expect lower prices to follow the imposition of the duty in the United States, as lower prices followed the same course in relation to tin plate. Long heralded changes lead to over-preparation in the way of big imports, which are expected to be succeeded by an easier demand.

The contract for supplying the C. R. R. with ingot copper for its works has been secured again this year by Thomas Robertson & Co., Montreal.

The hardware merchants of Hamilton, Ont., in their conference with the Ministers of Finance and of Trade and Commerce, expressed themselves as opposed to specific duties and complained of irregular appraisements.

The capitalists who made overtures to the City Council of Toronto for the concession of a free site and some other privileges for the establishing of large smelting works have got along better with the municipal authorities of Hamilton. That city is to give a free site and a bonus of \$40,000 on condition that the company expend on plant, machinery, &c., not less than \$400,000 and have ready by December 31, 1894, smelting works with a capacity of 150 tons of pig iron per day. Also, Hamilton agrees to give a further bonus of \$60,000, provided the company construct steel works costing \$400,000 and

have the same ready for operation by December 31, 1896. On account of a statute passed a year ago by the Ontario Legislature it was necessary for a special act to be passed in the session just closed before the city was competent to vote a bonus. The promoters of the company are Jas. J. Morehouse, James Morehouse, Wm. V. Reynolds, Wm. Foster, Jr., and E. H. Thompson, all of New York.

There appears to be a growing feeling in this province, and in Toronto particularly, that no aid should be given to iron works by the Legislature or any municipality until it is thoroughly known whether the supply of ore depended on for raw material is sufficient. There is a great deal said about the vastness of ore deposits in this province, but as much of it has come from persons more or less interested in creating an impression of inexhaustibleness, it is hardly safe information to go upon. The country does undoubtedly possess rich mineral wealth, but it is not clear that certain locations which are credited with a large store of ore are so in fact. It is, therefore, felt that the Government should make an investigation and ascertain to what extent certain claims for public aid, claims based on estimates of raw material, can be made good. For Toronto or any other city to embark citizens' funds in a great scheme for the building up of a smelting industry would be premature before a proper survey had been made of the sources of prospective supply. In a letter to the City Council of Toronto, Geo. Drummond of the Canada Iron Furnace Company, Three Rivers, Quebec, asks that such an investigation be made before his company makes any offer for the starting of a furnace in Toronto. He alleges that it is reported that the syndicate which are about starting works in Hamilton will use United States ore.

The Hamilton Council and Board of Trade are requested by J. J. Morehouse to petition the Canadian Government to allow such of his company's plant as cannot be manufactured in Canada to come in free, and to take the duty off coke.

Siemens & Halske have been granted the contract for supplying the wire, electric machinery and plant for conveying power from Niagara Falls to Hamilton. It will cost \$200,000 to bring the power and \$1,200,000 for machinery, &c. Power is to be supplied for lighting the city and propelling the street cars.

An order in council has been passed by the Canadian Government providing until the end of next session, Part I, for the free admission of steel for the manufacture of augers, auger bits and hammers when imported by the manufacturers of such for use in their own factories.

J. & C. Hodgson, Montreal, the only manufacturers of wrought-iron tubing in Canada, have closed down their works indefinitely. The high duty on the raw material and the low duty on the imported product are said to have made their industry unremunerative.

The capital of the Gurney Foundry Company of Toronto has been increased from \$40,000 to \$350,000.

The Toronto Furnace & Crematory Company, Toronto, are being incorporated to manufacture heating furnaces, crematories and fire closets and to take over the business of the Toronto Furnace Company.

Two factories are being built at Sherbrooke, Ont., one for making paper mill machinery, the other pulp mill machinery.

Four hundred tons of steel rails that arrived in St. John, N. B., a few weeks ago have been condemned and are being made into sheets for nail making at the rolling mills of that city.

The following are elected directors of the Ooe Hill Mining Company: Alex. McLaren, president; H. B. Payne, vice-president; David McLaren, J. L. Biggar, William Chisholm.

A new rasp and file factory is about to be started in Almonte, Ont.

The style of the E. & C. Gurney Company, Montreal, has been changed to the Gurney-Massey Company of Montreal.

PERSONAL.

Charles G. Eckstein of Charles G. Eckstein & Co., dealers in iron, steel and machinery, left New York May 20, on the French Liner "La Champagne" for a six or eight weeks' business trip in Europe.

H. S. Robeson, who has been with the Pottstown Iron Company for seven years, as superintendent of the Bessemer and open-hearth plants and of the blooming mill, has tendered his resignation, to take effect on the 15th inst.

"A Reminiscence" is the title of a neat pamphlet which recalls some of the principal features of the Fritz dinner. Its authorship is not revealed, but the writer will be quickly recognized as the one who was the originator and leading spirit of the undertaking.

Jones Wister of Philadelphia, who is well known in the iron trade, and who is an enthusiastic cricketer, has written and published "A Bawl for American Cricket," a work which should prove most valuable to lovers of the game. In his usual pleasant vein Mr. Wister in the opening chapters compares baseball with cricket and gives a history of cricket in America. The remaining chapters are devoted to a practical description of the game and its laws.

Frank S. Witherbee of Witherbee, Sherman & Co., who has just returned from a visit to Chicago and the Mesaba range, reports that there has been some exaggeration in the reports of the low prices at which ore can be mined in the new district. The stripping is heavy. A further drawback lies in the sudden fluctuations in the deposits, from Bessemer to non-Bessemer ore, and in the fineness of the ore itself.

W. H. Jaques, ordnance engineer of the Bethlehem Iron Company, read a paper illustrated by stereopticon views on "The Manufacture of High-Power Ordnance with Special Reference to the Wire Wrapped Gun," before the American Society of Civil Engineers, New York.

S. L. Schoonmaker has been elected second vice-chairman of the Carnegie Steel Company, with headquarters at New York.

Chas. Carroll Loring & Co., 272 Franklin street, Boston, Mass., composed of Chas. C. Loring and Fred. A. Houdlette, both for a number of years prominently connected with the iron and machinery trades, have established a special branch of their business and

announce themselves as experts, cataloguers, appraisers and auctioneers, and are prepared to execute commissions in mills, factories, machinery, tools, metals, &c.

The Losses of Small Investors in England.

Some astonishing figures presented in a report recently issued by the Inspector-General of Liquidations in Great Britain furnish food for reflection. The report in question is the first rendered under a new act of Parliament regulating the winding up, compulsory or otherwise, of public companies, and embraces those companies wound up during the year 1891. It shows that the loss to the British public who held shares in the collapsed concerns reached the enormous sum of \$94,858,815. The Inspector states, moreover, that when the cost of winding up and other expenses are added, the total loss will probably approach \$100,000,000. This is for one year only, and in but one country. Nothing could demonstrate more fully the extreme, almost criminal, credulity—or perhaps gullibility would be a more suitable term—of the investing public on the one hand and the unscrupulousness of some company promoters on the other hand. The mass of successful fraud represented in these figures is said to be great. In the majority of cases, too, the perpetrators escaped scot-free, only a few of the persons who shared in the plunder having come under the grasp of the law. Seldom is one brought face to face in so striking array with the facts of the case on this subject, and the lesson the figures teach us we should do well to lay to heart. For this condition of affairs is not confined to England. The old game of the spider and the fly is going on merrily in every country where the company promoter is abroad, and the matter touches persons of all conditions.

A large proportion of the losses in the collapsed companies represented, as we understand, the contributions of very small capitalists, many of whom had perhaps invested the savings of a life time of industry and frugality in what they had too easily been persuaded were sound and paying concerns. Those who have little to spare should think more than twice before investing even the smallest amount of capital in any concern whatever, however plausible and promising, of which they are not fully assured, by investigation and incontestable proof, that it is sound and that its promoters are reliable men as to character and of sound financial reputation. Such information can be readily obtained in all cities, from mercantile agencies, banks, or other sources which are above suspicion. It is mere justice to oneself, to those dependent on one, and to the community at large. The trouble is that men are everywhere found who will not put themselves out to take these necessary precautions, but are satisfied to take the word of those interested in getting their money, or who allow themselves to be deluded by the glowing terms of a prospectus. So that one is almost tempted to agree with the strong opinion of old Thomas Carlyle, that men are "mostly fools." Of course the tale of successful fraud above recorded only includes corporate operations which shelter themselves more or less under the cloak of the law. But the daily instances of men who ought to know better being fleeced by the more vulgar and petty arts of crooks and confidence men, and by means of tricks and impostures which are as old as the hills, show that much

and continued warning is needed to induce people to shield themselves against the wiles of that unsavory host, be they promoters of bogus companies or petty sneak thieves, who live upon the money extracted from the pockets of others. It is said that the number of those who "live by their wits"—that is, dishonestly—in New York City alone exceeds 80,000. The inference is that the honest and hard-working balance of citizens are fools to allow them to do so.

New Publications.

PUMPING MACHINERY. By William M. Barr. J. B. Lippincott Company, Philadelphia, publishers.

Mr. Barr's large experience with pumping machinery enables him not only to speak with high authority but with a deal of certainty as to the merits and defects of the various types of pumps and pumping machinery which are now so extensively used all over the civilized world. The scope of the work is to present, in as limited and condensed a form as possible, a description of the various forms of pumps and the details of their designs. An appendix gives an abstract of the report of the Duty Trial Committee of the American Society of Mechanical Engineers. In this way it shows how the different pumps are made and tested and what they ought to be capable of doing under certain specified conditions.

The practice in the design of water valves for different kinds of service has been quite various, and Mr. Barr has taken up these in succession and pointed out their good and bad points. He has also directed attention to the proper proportions of valve and plunger areas which ought to be maintained for various speeds of the plunger. As is well known, the making of the valve area too small in proportion to the size of the plunger is one of the most common of all the faults of pump design, and is, at the same time, the most difficult to detect. This particular fault is one which attaches itself peculiarly to low-priced pumps.

In view of the many uses to which hydraulic machinery is now put the careful review of hydraulic pressure pumps is very appropriate. The main features of the design and operation of these pumps are brought out in a clear and comprehensive manner. Attention is also given to the pressure pumps driven by power which have come into quite general use in connection with the use of hydraulic presses of numerous kinds.

The advantages claimed for a crank over a direct-acting pump are enumerated, though the author evidently leans to the belief that the direct-acting single and duplex pumps will give better satisfaction in general than crank and fly-wheel pumps, nor would this seem surprising to one who considers what little care the average pump receives. It is likely to be hidden away in some dark cellar, and there expected to do as much work as possible with a minimum amount of oil and attention. It is always true that the most efficient machine needs the most watchful care and attendance. As in many other departments of engineering, it is not always true that the most efficient machine, *per se*, is in reality the most efficient one for the purpose for which it is intended.

A chapter is devoted to the underwriter pump, which is built in accordance with the specifications prepared by the engineer of the Associated Factory

Mutual Insurance Companies. The author states that he regards the circular issued by these companies to contain the most intelligent and carefully prepared specifications for steam fire pumps that have come to his knowledge, and indeed it would seem as though a pump built in accordance with them would leave little to be desired.

Mining, rotary and centrifugal pumps are given their deserved share of attention. To the high duty pump, however, a still larger amount of space is devoted, in view of the increasing demand for this more efficient pump for the supplying of towns and cities with the enormous quantities of water that they daily consume. Several of the well-known types of high-duty pumps are described and illustrated. In addition to this the author has devoted a chapter to the testing of pumping machinery. In all the specifications for large pumps in these days a certain duty trial and a certain guaranteed performance is incorporated, and therefore it is most fitting that a description of such a trial should be set forth in a work of this kind. Reports of several tests made by prominent engineers are added to properly illustrate such trials.

In general it may be said of this work that it seems adapted to the needs of the pump user; it gives him a good notion of the machine which he wishes to employ, it warns him of the defects that are not immediately apparent in a cursory investigation of the subject, and from it he should be able to decide on the type of pump best suited to his wants.

At Pittsburgh A. P. Kennedy has entered suit against Park, Brother & Co., Limited, of the Black Diamond Steel Works, and Winfield S. Kennedy, to get possession of 24 shares of stock of the defendant company. W. S. Kennedy is an uncle of the plaintiff, and is said to have given to A. P. Kennedy 12 shares of stock in the firm, to be paid for out of dividends. The stock was given as a wedding present and transferred on the books of the company. Some time after the capital stock was increased from \$2,000,000 to \$4,000,000, and Mr. Kennedy claims his holding should amount to 24 shares; but instead of that he has none, the original 12 shares being transferred back to his uncle, and he now sues to recover.

Thomas Furnace of the Thomas Furnace Company, at Niles, Ohio, was blown out last week for relining and other repairs. This furnace is one of the best equipped in the Mahoning Valley, turning out about 200 tons of Bessemer iron of a high quality every 24 hours. As soon as repairs are completed it will resume blast.

The E. W. Bliss Company of Brooklyn, manufacturers of presses, &c., have decided at a meeting held this week to increase the capital stock from \$1,275,000 to \$2,000,000.

The officers of the Russian war ships "Dimitri Donski" and "Rynda," and the Austrian cruiser "Frundsberg," now lying in these waters, recently visited the works of the Bethlehem Iron Company, at South Bethlehem, Pa. A special train conveyed the party from Philadelphia to the proving ground of the Bethlehem Iron Company, at Redington, where an armor plate test was witnessed, after which the works were inspected.

MANUFACTURING.

Iron and Steel.

Last week about 40 men were suspended from the converting department of the Edgar Thomson Steel works at Bessemer, Pa. The suspension is said to be due to the fact that orders were not sufficient to allow the mill to be run to its full capacity.

Centre Furnace of the Centre Mining & Mfg. Company, Ironton, Ohio, which has been idle for some time undergoing repairs, resumed blast last week.

One of the Oxmoor, Ala., furnaces of the De Bardeleben Coal & Iron Company is being relined and refitted with a new bell and rim.

The court has been asked by the receivers of the Lady Ensley Coal & Iron Company for permission to start up one of the furnaces at Sheffield.

The Lookout Iron Company, Harriman, Tenn., which recently went into the hands of a receiver, has been granted permission by the court to resume operations in the finishing department, under the charge of the receiver, for the purpose of working up into marketable shape the stock on hand. The rest of the plant, however, will not go into operation.

It is announced that the machine equipment of the Beaver Falls Mills, Beaver Falls, Pa., will be enlarged by the addition of 40 new nail machines.

The Mahoning Valley Iron Company, Youngstown, Ohio, manufacturers of merchant iron, are preparing plans for the erection of a new bar mill, which will be built adjacent to their present plant. The structure will be fire proof as nearly as possible, and will be entirely of iron. It will be equipped with a 9-inch and a 12-inch mill, and the machinery will include all the latest improvements, the intention of the firm being to make it a model mill in every respect.

The Chattanooga Pipe & Foundry Company have secured a large order for 30-inch pipe from Texas, and it is probable that they will put their plant at Bridgeport, Ala., in operation to take care of this order.

A bill was filed last week at Knoxville, Tenn., against the Carnegie Iron Company and the Carnegie Land Company of Johnson City and the Farmers' Loan & Trust Company of New York. The action is brought by the attorneys of James P. Withrow & Co. of Pittsburgh, Pa., for the enforcement of a merchants' and furnishers' lien for \$10,195.41, balance on a contract for building the Carnegie iron furnace at Johnson City. The contract between the defendant and complainant companies was closed in March, 1890. The furnace was not completed until June, 1892, time for its completion having been extended because the Carnegie Iron Company failed to meet their payment to the contractors as the work progressed, according to the stipulations of the contract. Through a deed of trust given by the Carnegie Iron Company upon property to secure bonds to the amount of \$100,000, executed in July, 1891, the Farmers' Loan & Trust Company became a co-respondent of the suit. The complainants pray for attachment on the property of the Carnegie Land Company, that the claims of the Farmers' Loan & Trust Company be held in abeyance to the mechanics' and merchants' lien, and that the properties of the Carnegie companies be sold to satisfy the claims against them, interest accruing from December, 1891. The court has issued the fiats of attachment.

An order has been issued by the Court appointing H. C. Wood and J. K. Taggart receivers of the Big Stone Gap Land and Improvement Company of Big Stone Gap, Va.

The Boiling Springs Iron Company of Boiling Springs, Pa., advise us that their furnace is now turning out a superior quality of cold-blast charcoal iron, low in phosphorus and high in tensile strength and specific gravity. One-half of the output of the furnace has been taken for this year.

One of the furnaces of the Allentown Rolling Mills, at Allentown, Pa., blew in on the 21st ult., and both furnaces are now at work.

No. 2 Furnace of the Rockhill Iron & Coal Company, in Huntingdon County, Pa., was banked May 30, on account of a strike at the furnace. The employees demanded the reinstatement of some discharged men, said to have been leaders of the local labor union, which the company

refused to do. About 300 men are now out, and the entire plant of the company is idle.

It is said that the Wheeling Iron & Steel Company of Wheeling, W. Va., will make some extensive improvements to their several mills this summer. The Belmont furnace, operated by the company, has already blown out and will be relined and otherwise repaired. It will probably be late in the summer before the furnace will be in shape to resume operations.

It is stated that the billet mill being erected at Bay View, Wis., by the Illinois Steel Company will be put into operation some time in July.

The Union Malleable Iron Company of Moline, Ill., are having plans prepared for a new addition to their works, 82 x 94 feet in size.

Mount Vernon Furnace of the Campbell Iron Company, in Lawrence County, Ohio, will go into blast some time during the present month. It blew out in April for repairs.

Pulaski Furnace, Pulaski City, Va., will go into blast on the 12th inst. It blew out March 21.

The bar mill of the Hubbard Iron Company, Hubbard, Ohio, which has been idle since November last, has resumed work, and there is talk of the entire plant starting at an early date.

The building of the National Car Spring Company, at Newark, N. J., has been destroyed by fire. The loss is placed at \$50,000, and is covered by insurance. The works will be rebuilt.

No. 11 stack of the Thomas Iron Company, at Hellertown, Pa., has blown out for repairs. Furnace No. 10, which was blown out some time ago is to be rebuilt.

Machinery.

The plans for the new works of the Westinghouse Electric & Mfg. Company, to be built at Brinton, Pa., on the line of the Pennsylvania Railroad, about 11 miles from Pittsburgh, are nearly ready. Of the 232 acres owned by the East Pittsburgh Improvement Company, an identified interest, about 23 acres will be covered by the new works. The machine shop will cover a space of 750 x 250 feet; the warehouse 750 x 250 feet, the foundry 700 x 250 feet, and the boiler house 150 x 40 feet. Including other buildings the area of the ground floors will be 7½ acres, and including the second floors 15 acres. The structures will be fire proof, composed of steel and stone, and labor-saving devices will be employed to the fullest extent. Electricity as a motive power for labor-saving machinery will be utilized. It is announced that a large number of homes for the use of the employees will also be erected.

Notwithstanding the general depression in business Wm. Tod & Co., Youngstown, Ohio, have more work on hand than at any one time in their history. Their orders at present include high-pressure pumps, Bessemer and furnace blowing engines, and rolling-mill machinery of various kinds. Among orders recently received was one for a leveling plate for the Homestead Steel Works, at Homestead, Pa. This plate will measure 12 x 24 feet, being made in three pieces, and will weigh, with its supports, 100,000 pounds.

The Chicago Foundry Supply Company, owners of the Peerless Facing Mills, Chicago, advise us that their entire plant was not destroyed by fire on the 28th ult., as stated in Associated Press dispatches. Only their factory No. 1 was destroyed. Their factory No. 2 is running. Their large warehouse, full of overflowing with foundry facings, foundry supplies, Peerless plumbago and Peerless wash, was untouched. They are prepared to fill all orders as usual with promptness.

Jenkins Bros., 71 John street, New York, have recently perfected a rubber compound valve seat, in the form of a hard rubber disk, which successfully holds against high-pressure steam. They feel it has passed the experimental stage. The disks now sent out are an advance on those heretofore made during the past year. They have also increased the thickness of their iron body valves, so that hereafter they manufacture only one grade for high or low steam pressure.

A meeting of the stockholders of the Union Switch & Signal Company will be held in the Westinghouse Building, Pittsburgh, on Wednesday, the 14th inst., for the purpose of voting for or against an increase of the indebtedness of the

Union Switch & Signal Company by the issue of new bonds secured by mortgage. The proposed new issue of bonds, or the proceeds of the same, to be applied to the retirement of the existing mortgage indebtedness of said company.

The Wilson Snyder Mfg. Company of Pittsburgh have entered suit against the city of McKeesport to recover \$10,635.90, a balance claimed to be due for the erection of an engine in the water works at McKeesport, with a capacity of 5,000,000 gallons per day. The contract was made December 5, 1887, and the work was completed on July 30, 1888, when half of the contract price was paid, and nothing has been paid since.

The Southside Foundry & Machine Company of Charleston, W. Va., are preparing to greatly enlarge the capacity of their plant. They will erect new buildings and add new machinery.

The Pennsylvania General Electric Company, for the Hudson Electric Light & Power Company, have placed an order with the Philadelphia Engineering Works Limited, for nominally a 1000 horse-power cross compound condensing engine. This engine has a high-pressure cylinder 26 inches in diameter; low pressure cylinder 50 inches in diameter, 50 inch stroke. It is intended strictly for electric railway work, and is built excessively heavy, as may be gleaned from the fact that the journals are 16 inches in diameter and 30 inches long. The band wheel is to be 22 feet in diameter, 74 inches face and weigh 100,000 pounds. The greatest care is taken in designing and securing this wheel so that the unfortunate occurrences so frequently taking place will be avoided. All port areas of both cylinders are excessively large, the low pressure being three times larger than the high. It is to have an independent condenser, supplied with two 24-inch air cylinders, 10-inch stroke, traveling in opposite directions. The receiver is made of good capacity, and thoroughly reheated with numerous solid drawn brass tubing running through it, thus revivifying and practically superheating the steam while entering the low-pressure cylinder. The plan adopted in proportions will be much the same as the two vertical cross compound condensing engines built by the Philadelphia Engine Works, Limited, for the Hudson Electric Light Company, Hoboken, N. J., between which this horizontal engine is to be placed. These cross vertical compound engines have given very satisfactory results, running at 100 revolutions per minute, developing about 600 horse-power, and frequently reaching 800 horse-power. These works have now on hand three 50-inch Corliss cylinders, 6 feet stroke, for compressing air for the blast furnace at Poughkeepsie, N. Y. The fly wheels are 100,000 pounds weight and 24 feet in diameter. The frames are not of the ordinary Corliss but of box form (a type used more generally in England than in America). In addition to these they have quite a number of from 200 to 400 horse-power Corliss engines of standard type in progress.

Thos. H. Dallett & Co. of Philadelphia are devoting much attention to the construction of electric generators and motors, and their facilities for manufacturing are excellent. They make the machinery for any power required, and have built some large light and power plants. The New York Biscuit Company put in one of their 100 horse-power motors and a generator, which are providing for 2200 lights. Orders recently completed include one from Haines, Jones & Cadbury, manufacturers of plumbers' supplies, Philadelphia, for a plant consisting of a 500-light generator, an 18 horse-power motor for their wood-working department and a 10 horse-power motor for their pipe cutting and threading shop, and one from the Newport News Shipbuilding & Dry Dock Company for a 65 horse-power motor for furnishing power to their smiths' shop. They have also furnished several of their motors to William Sellers & Co. for use in connection with their cranes. With the work in their drill department they are kept very busy.

The J. H. McLain Machine Company of Canton, Ohio, have assigned. The liabilities are placed at \$120,000 and the assets at \$150,000.

The plant of the Case Mfg. Company, manufacturers of mill supplies, mill machinery, &c., at Columbus, Ohio, has been burned.

The Yale & Towne Mfg. Company of Stamford, Conn., have secured through F. G. Tallman, their Pittsburgh representative, an order for four 5-ton three-motor

electric traveling cranes to be placed in the new foundry now being erected by the Standard Mfg. Company on Preble avenue, Allegheny, Pa. These cranes are to be of the latest design of the Yale & Towne Mfg. Company and are similar in construction to the crane furnished by this firm for the World's Fair which has been placed in the Middle Bay of Machinery Hall.

B. H. & J. Sanford, proprietors of the Phoenix Iron Works, at Sheboygan Falls, Wis., have made an assignment. The assets are placed at \$25,000 and the liabilities at \$12,000.

The Chaplin, Fulton Mfg. Company, Pittsburgh, have just completed the building of two gas regulators for the Duquesne Steel Works, which will be used for so regulating the natural gas supply to 100 boilers that the steam pressure will be kept to 100 pounds. The regulators have 16-inch inlets and outlets.

The Leechburg Foundry & Machine Company, Pittsburgh, have received an order from the Whitaker Iron Company of Wheeling, W. Va., for a Mesta patent pickling machine, which it is claimed will pickle plates up to 130 inches long and of any width. The same firm have also received an order from Marshall Brothers & Co. of Philadelphia for two 36-inch trimming shears, for which this firm have recently been granted a patent.

Miscellaneous.

In a card to the public issued on June 1, the managers of the Standard Plate Glass Company, Butler, Pa., announce that owing to the dullness of trade and the stringency of the money market, the works would shut down for an indefinite period. The hope is expressed that a revival of business will permit operations being resumed at an early date.

The Worcester Consolidated Street Railway Company of Worcester, Mass., have placed the contract for their new car house with the Berlin Iron Bridge Company of East Berlin, Conn. The new building will be 95 feet in width and 290 feet in length, entirely of brick and iron.

It is announced that nearly all the stock in the Girard Stove & Foundry Company, Girard, Ohio, has been subscribed. It is the intention of the stockholders to apply for a charter at an early date under the laws of West Virginia. This new concern will succeed to the business of the Girard Stove Works, which became financially embarrassed some months ago, due to the failure of Robert L. Walker, a heavy stockholder.

The consolidation of the Hinson Car Coupler Company of Chicago and the Southern Malleable Iron Company of Chattanooga, Tenn., which has been before referred to in these columns, was completed last week. The capital stock of the new company is \$2,800,000 and the Chicago concern will move to Chattanooga. The officers of the new company are: President, F. G. Kammerer of Chicago; vice-president, J. M. Elliott, Jr., Gadsden, Ala.; secretary and treasurer, Gus. F. Meehan of Chattanooga. The Directors are F. G. Kammerer, J. M. Elliott, W. P. Smith of Chicago; J. E. Forsythe of Chicago, and Chas. Herron of Chattanooga. The new company will enlarge their present plant and also erect a steel mill.

Among recent incorporations in Illinois are the following: Self-Acting Air Brake & Car Coupler Company, at Chicago; capital stock, \$10,000,000; for the manufacture of car couplers and automatic air brakes and couplers; incorporators, Victor K. Koerner, T. D. Hurley and Louis A. Roy. Gibson Iron Works, Gibson City; capital stock, \$50,000; for a general foundry and machine business and for the manufacture of hot water and steam radiators; incorporators, J. W. Paines, E. H. Harry, T. R. Wiley and Robert A. McClure.

The Copper Smith Works of Engel, Kirchner & Regnier, at Baltimore, Md., has been destroyed by fire at a loss of \$33,000.

Announcement is made that the Akron Belting Company and the Brigger Belting Company, both of Akron, Ohio, have been consolidated under the name of the Akron Belting Company, with a capital of \$100,000. Considerable new machinery has been added to both plants, which will considerably increase the output. The officials of the new concern are as follows: Geo. W. Crouse, president; A. M. Barber, vice-president; A. B. Rinehart, general manager; Sumner Nash, secretary and treasurer; Webster Thorp, superintendent.

TRADE REPORT

The Iron and Steel trade is still under a cloud, which those who are pessimistically inclined claim to be getting blacker. It is useless to deny that the arguments of the more sanguine men sound somewhat strained and are often far fetched. The most convincing point, so far as the general financial situation is concerned, is the resumption of quite a heavy export movement in wheat and the consequent decline in exchange, with its attendant check upon further gold shipments.

Now that the Ore question is pretty well settled, the Illinois Steel Company having bought about 500,000 tons at the established rate, the Coke situation is commanding attention. A good many contracts, covering six months' supplies, are about to expire, and the outside furnace interests are represented as very eager to make better terms. The basis of the majority of these contracts has been \$1.50 @ \$1.55, but a further lowering in price is resisted, on the ground that it would entail a lowering in wages. Since furnacemen have got it into their heads that there is a very liberal profit, that argument will make little impression.

Apathy prevails in all the leading Pig Iron distributing centers, with an uncomfortable story emanating from Buffalo that a surprisingly low price has been made there for quick delivery and for cash. Such exceptional transactions are to be expected under conditions like those prevailing, but they breed uncertainty, and becoming more frequent may ultimately establish a lower range of values. The threatened strike of the stove molders is an uncomfortable feature, since it may reduce consumption.

As indicating that occasional good orders do come into the market, we may instance the closing of contracts for about 17,000 tons of Cast-Iron Pipe for the East River Gas Company, New York.

Nothing definite has yet come out concerning the negotiations on the wages scales in Pittsburgh. Business in raw material is naturally very much restricted. The Wire-Rod makers in the West are taking the bull by the horns by deciding to close down entirely in July. They thus put themselves into an independent position with the men, ease up the market for Steel Billets and strengthen that for their product.

Attention is being directed to the large quantities of Steel Rails fit to relay which are coming into the market, thus restricting the sale of new Steel Rails. Of all the departments the Rail trade is in the most miserable condition in the matter of prospective work.

Old Material seems to be growing more and more difficult of sale, and prices have reached an exceedingly low level.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., June 8, 1893.

The situation shows very little change from last week, but the feeling is probably of a more settled character, and to that extent there is improvement. There is a pretty fair demand for nearly everything in small lots, quick delivery, but there are no new or important orders on the market, and nothing to indicate any radical departure from the conditions now or recently prevailing. Attention is chiefly centered on the labor and financial situations, neither of which is satisfactory, or likely to be, although efforts are being made to adjust both, which it is hoped will meet with some degree of success. Gleams of sunshine break out once in awhile, and it is worthy of note that in these times of stringency, one of the very largest rolling mills in the vicinity are discounting all their bills payable, and have given a general notice that any claim against the company will be paid cash on demand, less interest at the usual rate. It is pretty clear, therefore, that in spite of the disposition to curtail credits, and to hoard money, those who have passed through the recent crisis are entitled to be classed among "the survival of the fittest." There may not be much improvement in the Iron trade until after midsummer, but there is reason to believe that the lowest point of depression has been reached, and barring something unforeseen, there is a general impression that the fall trade is likely to be better than that during the earlier portion of the year.

Pig Iron.—Not much business doing, so that it is difficult to say whether the market is better or not, or to what extent it is better. Those who have Iron for sale are asking the full prices of last week; and as stocks are in good shape, there is no necessity for forcing material on unwilling buyers. The truth is, however, that both sides are more inclined to close up existing contracts than to enter into anything additional, consequently deliveries are being hurried forward, which serves the double purpose of keeping furnaces clear of accumulations and consumers amply supplied with stock. These conditions are likely enough to continue for some weeks to come, after which it will depend upon developments. Should there be a more settled and easier money market, and no further unfavorable features brought out during the July holidays, it is probable that Iron will be firm, and possibly a little dearer, but with a continuance of present conditions, a decreased production or lower prices are almost inevitable. Which of these influences will predominate it is impossible to say; and in view of the uncertainty, buyers and sellers alike are trading from hand to mouth at about the following prices delivered for Philadelphia or equivalent points, and 20¢ @ 30¢ less on brauds at Harrisburg, and intermediately to Baltimore:

American Scotch, No. 1X...	\$16.00	@	\$16.50
American Scotch, No. 2X...	15.00	@	15.50
Standard Penna. (Lake Ore), No. 1X...	15.00	@	15.50
Standard Penna. (Lake Ore), No. 2X...	14.50	@	14.75
Standard Virginia, No. 1X...	14.75	@	15.00
Standard Virginia, No. 2X...	13.75	@	14.25
Virginia and Southern, No. 1X, Soft...	14.25	@	14.50
Virginia and Southern, No. 2X, Soft...	13.50	@	13.75
Standard Penna. and Virginia Forge...	13.00	@	13.25
Ordinary Forge...	12.50	@	12.75

Steel Stock.—There is very little inquiry and very little to sell. It would be impossible to pick up any decent sized lots, as furnaces have used up all their Ores, and are either out of blast or preparing to go out, as they cannot replace Ores to make Iron at current rates. A few hundred tons standard Bessemer sold at \$16.25 delivered, and Low Phosphorous at \$18 @ \$18.25.

Steel Rails.—Business very quiet at \$29, at mill, for standard sections. Mills are running moderately full, but have not much work for fall delivery. Girder Rails active and firm at \$34 @ \$36, f.o.b. cars, mills.

Steel Billets.—It is a somewhat difficult market to define. Prices are firm for early delivery. Two or three orders from good concerns would be placed at \$24 @ \$24.25, delivered, but the mills all seem to be full, and while they offer August or late July at \$23.50 @ \$23.75, they are unwilling to shade prices for earlier deliveries. The position is feverish and unsettled, with prices liable to advance sharply in case of any extended shut down in the West, and the reverse in case the stoppage is likely to be only temporary. The market hinges on that one point, and as no one knows how it will turn out, business is naturally kept within comparatively narrow limits.

Muck Bars.—There is nothing doing of any importance. Holders are firm at \$23.25 @ \$23.50, delivered (some ask \$23, at mills), in the belief that there will be a demand during the hot weather, and that prices are likely to be better, but buyers are scarce and show very little interest in the market.

Bars.—There is a fair demand for small lots, but there is nothing beyond the usual routine business. One or two good-sized orders have been taken, but at prices and on terms which show a wonderful desire for business, regardless of the margin for profit. General quotations are from 1.60¢ to 1.65¢, city delivery, for best refined Iron, according to quantity, quality, specifications, &c., and at interior points 1.50¢ @ 1.55¢, f.o.b. cars at mill.

Plates.—Without any specially large orders, the demand is sufficient to keep the mills steadily employed. There is nothing in sight to indicate any material change in the situation, but it is thought that very little business will be done during the next few weeks. Some of the mills will shut down during the earlier portion of next month, as there is not likely to be work enough to keep them going, unless at ruinously low figures. To-day's prices are pretty well down to the lowest ever known, and on orders of any importance competition would be extremely close. Nominal quotations on ordinary sized lots are about as follows (delivered), but on large orders special rates are easily obtained:

	Iron.	Steel.
Tank Plates....	1.80 @ 1.85¢	1.75 @ 1.80¢
Shell.....	2.10 @ 2.20¢	2.10 @ 2.20¢
Flange.....	2.70 @ 2.90¢	2.25 @ 2.40¢
Fire Box.....	3.00 @ 4.00¢	2.50 @ 2.70¢
Special qualities.....	3.25 @ 3.75¢	3.25 @ 3.75¢

Structural Material.—Business is dull in this department, and while work at mills is fairly active, it is chiefly on old contracts, and on small lots for quick delivery. There is nothing important in sight, and prices are easier at about last week's nominal quotations: Beams, Channels, or Tees, 2¢ @ 2.20¢, according to size of order; Angles, 1.80¢ @ 1.85¢; Universal Plates, 1.75¢ @ 1.80¢.

Sheets.—The demand is quite up to the average, but complaints in regard to prices are very general. Some of the best makes command the rates recently ruling, but on common qualities exceedingly low figures are quoted. The following are nominal quotations for best qualities, subject to slight concessions on large orders:

Best Refined, Nos. 14 to 20....2.75¢ @ 2.85¢
 Best Refined, Nos. 21 to 24....2.90¢ @ 3.00¢
 Best Refined, Nos. 25 to 26....3.15¢ @ 3.20¢
 Best Refined, No. 27.....3.30¢ @ 3.40¢
 Best Refined, No. 28.....3.40¢ @ 3.50¢
 Common, $\frac{1}{4}$ ¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about $\frac{1}{4}$ ¢ lower than here named:

Best Soft Steel, Nos. 14 to 16...2 $\frac{1}{2}$ ¢ @ 2 $\frac{5}{8}$ ¢
 Best Soft Steel, Nos. 18 to 20...2 $\frac{7}{8}$ ¢ @ 3¢
 Best Soft Steel, Nos. 21 to 24...3 $\frac{1}{8}$ ¢ @ 3 $\frac{1}{4}$ ¢
 Best Soft Steel, Nos. 25 to 26...3 $\frac{3}{8}$ ¢ @ 3 $\frac{1}{2}$ ¢
 Best Soft Steel, Nos. 27 to 28...3 $\frac{5}{8}$ ¢ @ 3 $\frac{3}{4}$ ¢
 Best Bloom Sheets, $\frac{1}{4}$ ¢ extra over the above prices.

Best Bloom, Galvanized, dis....70 and 5%
 @ 70 and 10%

Old Material.—There is practically no market, so that quotations are more or less nominal. Holders are not endeavoring to force sales, as such a course weakens prices without securing much business, as buyers will take nothing that is not absolutely necessary. Asking prices about as follows: Old Iron Rails, \$17 @ \$18, delivered; Old Street Rails, \$19 @ \$19.50; Old Steel Rails, \$15 @ \$15.50; No. 1 Railroad Scrap, \$15 @ \$16, Philadelphia, or for deliveries at mills in the interior, \$15 @ \$16, according to distance and quality; \$8 @ \$9 for clean new No. 2 Light Scrap; \$7.50 for old No. 2 Light Scrap; \$11.50 @ \$12 for Machinery Scrap; \$12 @ \$12.25 for Wrought Turnings; \$8 for Cast Borings, and nominally \$22 for Old Fish Plates, and \$13 @ \$14 for Old Car Wheels.

Wrought-Iron Pipe.—There is not much demand at present, and what business there is, is taken at very irregular prices. Discounts are nominally as follows, but on desirable orders an extra 5 % is not hard to get:

Butt-Welded Black.....57 $\frac{1}{2}$ %
 Butt-Welded Galvanized.....50%
 Lap-Welded Black.....67 $\frac{1}{2}$ %
 Lap-Welded Galvanized.....57 $\frac{1}{2}$ %
 Boiler Tubes, 2 $\frac{1}{2}$ inches.....65%
 Boiler Tubes, 3 inches.....67 $\frac{1}{2}$ %

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 69 Dearborn street, CHICAGO, June 7, 1893.

A genuine panic has prevailed this week among depositors in private banks and savings banks, caused by a few failures of private banks, which started a feeling of uneasiness among the people at large. This is the first indication of a panic in Chicago. A large number of banks are affected in this way and serious consequences are apprehended. The panic is largely confined to the poorer classes, but business men are very greatly concerned over the situation.

Pig Iron.—Consumers are curtailing their requirements and trade is light, running only to small lots for immediate shipment. Inquiries for Coke Iron are in the market but there is no haste among buyers to close contracts of any size. They are apparently feeling the market to see whether prices are any weaker in consequence of the depressing financial conditions. Lake Superior

Charcoal is inactive but evidently no weaker than it has been. The Charcoal makers are now so few in number that the trade is in much better hands than was formerly the case and perhaps can be controlled better. Concessions may perhaps be obtained on our quotations, but in the absence of transactions to test values we make no change. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$18.70 @	\$17.00
Local Coke Foundry, No. 1....	13.75 @	14.25
Local Coke Foundry, No. 2....	13.00 @	13.25
Local Coke Foundry, No. 3....	12.75 @	13.00
Local Scotch.....	14.00 @	13.00
Ohio Strong Softeners.....	16.00 @	16.50
Southern Silvery, No. 1.....	@	15.00
Southern Silvery, No. 2.....	@	14.50
Southern Coke, No. 2.....	12.85 @	13.25
Southern Coke, No. 3.....	12.35 @	12.75
Southern, No. 1, Soft.....	12.85 @	13.25
Southern, No. 2, Soft.....	12.35 @	12.75
Southern Gray Forge.....	11.85 @	12.25
Tennessee Charcoal, No. 1....	16.50 @	17.00
Alabama Car Wheel.....	@	18.85
Coke Bessemer.....	14.50 @	15.00
Hocking Valley, No. 1.....	16.75 @	17.00
Jackson County Silvery.....	16.75 @	17.00

Bar Iron.—Orders have been small and by no means numerous. Manufacturers, especially in the Mahoning Valley, claim to be making preparations for a long shut down in July and insist that they will make no concession in price now to influence orders, believing that in a week or two buyers will realize the approaching curtailment of production and will then meet their figures for the short period remaining. They quote 1.40¢, at mill, or 1.53¢, Chicago, but this price can be beaten by mills nearer at hand, selling at 1.45¢ @ 1.50¢. Soft Steel Bars are unchanged at 1.60¢ @ 1.65¢, Chicago, for mill shipment. Prices from store continue about as before.

Structural Material.—The Milwaukee City Hall was the only large building contract placed last week, but there still seems to be some doubt as to whether the letting is final. It is possible that bids may be reopened. Beams and other material have recently been selling in small lots only, so that prices in this market have not been tested to any extent. Quotations therefore continue as reported last week: Beams, 1.85¢ @ 1.95¢; Tees, 1.95¢ @ 2.05¢; Angles and Universal Plates, 1.85¢ @ 1.90¢. Small lots from stock sell at 15¢ @ 20¢ @ 100 above these prices.

Plates.—Business has been somewhat more active since our last report, principally in Tank Steel, with some nice orders booked for Boiler Plates. While transactions have been more numerous, the aggregate, however, was not very large, and the market cannot be termed brisk. Quotations on mill shipments, Chicago delivery, are as follows: Tank Steel, 1.75¢ @ 1.85¢; Shell Steel, 2.05¢ @ 2.15¢; Flange Steel, 2.20¢ @ 2.30¢; High Grade Fire Box, 2.75¢ @ 5¢. Store prices are as follows: Nos. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.20¢ @ 2.40¢; Shell, 2.35¢ @ 2.50¢; Flange Steel, 2.60¢ @ 2.80¢; Boiler Tubes, 67 $\frac{1}{2}$ % @ 70%.

Sheets.—Black Sheets are quiet, with mill shipments quoted at 2.85¢ @ 2.90¢ for No. 27 Common, 10¢ @ 15¢ @ 100 advance for Sheet Steel. Galvanized Iron is in moderate demand at 70 and 10 % discount for Juniata. Sheet Copper is steady at 30 & 5 % off for small lots.

Merchant Steel.—Trade is not active, but quotations on mill shipments are unchanged at 1.90¢ @ 2.10¢ Chicago, for Smooth-Finished Machinery; 2¢ @ 2.15¢ for Open-Hearth Spring; 1.70¢ for Iron-Finished Tire; 2¢ @ 2.20¢ for

Smooth-Finished Tire; 6¢ @ 7¢ for Ordinary Tool, and 12¢ upward on Specials.

Rails.—The demand for standard sections of Steel Rails has again been confined to small lots only, which are needed for immediate repairs. Light Rails are a little more active. The unsatisfactory condition of the Rail trade here is shown by the continued idleness of the Union Works, which last year were in operation at this time turning out a good tonnage. The trade now is not more than sufficient to keep the South Works alone in operation. Prices, however, continue firm at \$30 @ \$32, according to quality. Iron and Steel Splice Bars are moving well at 1.65¢ @ 1.70¢; Track Bolts, with Hexagon Nuts, are unchanged at 2.60¢ @ 2.65¢; Spikes, 1.90¢ @ 2¢.

Old Rails and Wheels.—Speculative interest in Old Iron Rails has completely disappeared, and consumers seem to be in no need of them. Railroads continue to ask \$18, but dealers would not take hold of them unless they could secure them for \$16 @ \$17. Old Steel Rails are neglected at \$10.75 @ \$15, according to length. Old Car Wheels are unchanged at \$14.25 @ \$15, with very little doing.

Scrap.—Nobody is now buying Old Material, even the dealers being reluctant to accumulate stock. Selling prices are about as follows @ net ton: No. 1 Forge, \$13; No. 1 Mill, \$9; Sheet Iron, \$5; Pipes and Flues, \$8.50; Axles, \$20; Horseshoes, \$12; Fish Plates, \$14.50; Spikes and Bolts, \$12.50; Cast Borings, \$5.25; Wrought Turnings, \$7.25; Axle Turnings, \$9.50; Heavy Cast, \$10.50; Stove Plate, \$8; Malleable Cast, \$8; Mixed Steel, \$9.50, gross ton; Leaf Steel, \$16.

Copper.—Prices are unchanged on both Lake and casting brands.

St. Louis.

(By Telegraph.)

Office of *The Iron Age*,
 Bank of Commerce Building,
 St. Louis, June 7, 1893.

Pig Iron.—The market is extremely quiet and sales are limited to carload quantities up to 100-ton lots, which are for prompt shipment. Consumers are buying only as their immediate needs require, and even the naming of lower prices for future delivery does not induce them to enter the market at this time. The natural result is a steady market, with but little complaint from furnaces regarding prices. Gray Forge, which has been freely quoted at from \$7.75 to \$8, f.o.b. cars Birmingham, seems to have settled on the latter figure as the minimum, and it is only in extreme cases that this price will be shaded. No. 2 Foundry at \$9 is in the same position. The consumptive demand is limited, and while the financial outlook continues as unfavorable as it is at present any improvement is out of the question. We quote as follows, for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$13.00 @	\$13.50
Southern Coke, No. 2 Foundry.....	12.00 @	12.25
Southern Coke, No. 3 Foundry.....	11.00 @	11.75
Southern Gray Forge.....	11.25 @	11.50
Southern Car Wheel.....	17.75 @	18.25
Lake Superior Car Wheel.....	17.00 @	17.50
Ohio Softeners.....	16.00 @	17.00
Missouri Charcoal, No. 1 Foundry.....	13.00 @	13.50

Bar Iron.—The demand for Bar Iron continues to show a steady falling off,

and prices are weaker in consequence. Jobbers and large consumers are buying only in limited quantities, and mills have only about sufficient business to run the month out. They are undecided about the future, as it is expected that July 1 will be made notable by the labor trouble, and with this in view they are not desirous of having too much work on hand for future delivery. We quote 1.50¢ f.o.b. cars East St. Louis. Jobbers ask 1.65¢ @ 1.70¢, according to quantity.

Barb Wire.—Dullness reigns supreme in this department, and prices fail to show any improvement. The stocks in makers' hands continue to grow, and even the low prices ruling today fail to induce business. Mills quote \$2.10 @ \$2.15 for carload lots of Painted to jobbers. Galvanized 40¢ @ 100 additional.

Wire Nails.—There is no improvement to note in this department. Trade is dull, and prices are being cut without having any material effect in securing orders. Mills quote \$1.55 in carload lots to jobbers, which price, we are advised, is shaded in some cases.

Rails and Track Supplies.—The demand for Steel Rails is light, and but little business is doing. Prices are as follows: Rails, \$31.60 @ \$33, according to quantity; Splice Bars, 1.70¢; Spikes, 2¢; Bolts, Square Nuts, 2.50¢; with Hexagon Nuts, 2.60¢. Old Iron Rails are quoted \$17 @ \$17.50, East St. Louis.

Pig Lead.—There is nothing of importance to note in this department. Offerings at 3.55¢ are made for this month's delivery, without, however, resulting in any business. At this writing the market looks very heavy, and a lower range of prices will doubtless prevail before the week is out.

Spelter.—There is absolutely no business doing, and a nominal quotation is 4¢. The coal strike in the Kansas district continues, but does not seem to have any effect on the Spelter market whatever.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, June 7, 1893.

Trade in Pig Iron has been light all the week, and, while there is no quotable change in prices, the general tone of the market is easy. There continues to be applications to hold back deliveries on maturing contracts, and there is no disposition to buy in advance of consumptive necessities. The chief sales have been of No. 2 Foundry and Gray Forge Coke Iron, but there have been some sales of No. 3 Foundry at \$8.25 f.o.b. Birmingham. The sales, while fairly satisfactory under the circumstances, do not aggregate more than a moderate quantity, nor are they expected to improve much until there is an easing up in the monetary situation. The Pig Iron trade holds its own comparatively well, probably better than most other kinds of business. The monetary stringency, however, has the effect of cutting down consumption in nearly all branches. Even the jobbing furnaces complain that business is falling off, and it is only the Iron Pipe works that appear to be melting as much Iron as usual, and there are indications that they may be obliged to curtail their output before long. There is no demand for Charcoal Iron, and

prices are little better than nominal. Quotations are as follows:

Foundry.

Southern Coke, No. 1	.....	\$13.00 @ \$13.25
Southern Coke, No. 2	.....	11.50 @ 11.75
Southern Coke, No. 3	.....	11.00 @ 11.25
Ohio Soft Stone Coal, No. 1	.....	18.00 @ 18.25
Ohio Soft Stone Coal, No. 2	.....	15.00 @ 15.25
Lake Superior Coke No. 1	.....	15.00 @ 15.25
Lake Superior Coke No. 2	.....	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	.....	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	.....	17.50 @ 18.00
Tennessee and Alabama Charcoal, No. 1	.....	15.00 @ 15.50
Tennessee and Alabama Charcoal, No. 2	.....	14.00 @ 14.50

Forge.

Gray Forge	.....	10.50 @ 10.75
Mottled Coke	.....	10.50 @ 10.75

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	.....	\$16.75 @ \$18.00
Lake Superior Car Wheel and Malleable	.....	17.25 @ 17.50

Boston.

Office of *The Iron Age*, 146 Franklin St., BOSTON, June 6, 1893.

The Iron market is very quiet and almost without feature. Consumers take such lots of Iron as they require for use, but they are entirely destitute of speculative spirit, and will wait till they want Iron again. Still, agents are not admitting any considerable changes in values.

Pig Iron.—The demand for Pig Iron is still what might be termed good, but the offerings from the furnaces are such that a good deal of Iron is daily bought without a ripple of excitement in the trade, except that some dealers and consumers may be struck at the rather easier prices that are paid. But, after all, agents and dealers do not admit that prices have declined. Southern Iron, delivered at Boston, is quotable at: No. 1, \$15 @ \$15.50; No. 2, \$14.50 @ \$15; No. 3, \$13 @ \$14. The market on Pennsylvania Iron here continues dull, with quotations at: No. 1, \$14.50 @ \$15; No. 2, \$13.50 @ \$14; Gray Forge, \$13 @ 13.50. These prices are for Iron at shipping port. Spot lots would cost more by the amount of freight and other charges. There is some demand for Western Iron, with the market quoted at \$17.50 @ \$18 for Iron delivered at Boston.

Bar Iron.—The Bar Iron market is very steady, with the demand fair. It is gratifying to hear some of the oldest and best known merchants in the trade say that the month of May was one of the biggest months they have ever had in the trade. They do not pretend that profits on selling Iron have been great, only that the volume of business has been extremely good. The Bar Iron mills in New England are running, and there is more hope of profits than for a long period of time: Ordinary New England Bars, 1.60¢ @ 1.65¢ from mill; from store, 1.65¢ @ 1.70¢; best Puddled Iron Bars 1.80¢ @ 1.90¢ from mill; from store, 2¢ @ 2½¢. In the position of Norway and Swedish Bars there is very little change to note. The new Iron is said to be slow in coming forward. Here the market is at \$64.50 @ \$66 ¢ ton for Bars and Shapes.

Building Iron.—The market on Structural Iron remains quiet. Agents say that there are some contracts still on the market, but builders are inclined to expect lower prices than they will get generally. Were it assured that there would be labor troubles in the iron manufacturing centers after July 1, it would lead to the placing of a good many orders for Structural Iron. But as it is, the trade is quiet. Beams and Channels, from mill, 1.90¢

@ 2¢; from store, 2.30¢ @ 2½¢; Tees, 2.20¢ @ 2.30¢ from mill; from store, 2.40¢ @ 2.65¢; Angles, 1.90¢ @ 2¢ from mill; from store, 2.30¢ @ 2.35¢.

Steel, Steel Plates and Steel Rails.

—The market on Steel is quiet, and yet there is a steady business for the machinists, and manufacturers are very busy as a rule. The volume of Soft Steel going into use is very heavy and increasing. Quotations are at: Bessemer Steel, 2¢ @ 2.10¢; Tire and Sleigh Shoe, 1.95¢ @ 2¢; Sheet, 2½¢ @ 2¾¢; American Cast, 6½¢ @ 7¢; English Cast, 14¢ @ 15¢; American Steel Rails, \$29 at mill. Steel Plates are in rather better demand, with some of the mill's better supplied with orders. The quotations are regarded as more steady at: Tank, 1.85¢ @ 1.90¢; Shell, 1.85¢ @ 2¢; Refined, 2.10¢ @ 2.15¢; Flange, 2.15¢ @ 2½¢; Fire Box, 2½¢ @ 2¾¢.

Nails.—The demand for Nails is good, and prices are well sustained. Small lots are quoted at \$1.50 @ \$1.60 ¢ keg, and at \$1.45 @ \$1.50 for large lots. The above prices are for both Iron and Steel Cut Nails. The recent test of the relative holding power of Wire Nails against Cut Nails seems to be exciting a good deal of attention among builders and manufacturers. Steel Wire Nails are quoted at the rate of \$1.70 @ \$1.75 to the trade.

Pipe and Tubes.—The demand for Pipe is better, with more inquiry noted. There are also a great many water contracts for Pipe being placed. The market is very steady in the matter of prices. Boiler Tubes are in fair request.

Scrap Iron.—There is some demand for Scrap Iron, with the market easy. No. 1 Wrought is bought at 50¢, though a more reasonable quotation would be 50¢ @ 52½¢. Special selections are quotable at 60¢ @ 65¢, and in this quotation Old Horseshoes are included. Light Iron is quoted at 35¢ @ 40¢. Machine-shop Scrap finds a better market since the starting of the Wareham Iron Mills, with Wrought at 30¢ @ 35¢; Cast, 25¢ @ 30¢.

Cleveland.

CLEVELAND, OHIO, June 5, 1893.

Iron Ore.—Despite the reported purchase of 500,000 tons of Ore by the Illinois Steel Company the market is dull, and buyers are as shy of it as ever. The Ore bought by the Illinois Company is largely made up of the output of the Chandler and Vermillion mines, in which the company are largely interested. Some of it is just below the Bessemer limit and sold for figures close to \$3.50 ¢ ton. The heavy purchases of the Chicago concern are still to be made, but it seems a settled fact that the Bessemer still to be taken will go at prices equivalent to \$3.75 ¢ ton, f.o.b. vessels, Cleveland. Locally, the market does not show the improvement hoped for. Indeed, it is duller than for several weeks past, and sales during the past week have been scattering indeed. An occasional sale of non-Bessemer at \$2.80 @ \$3.10, f.o.b. vessels lower lake ports, is reported, and the Ore remaining unsold on the docks at the opening of navigation is being rapidly taken up. A few thousand tons of good Bessemer Ore have been sold during the past ten days at \$3.75 @ \$3.85 ¢ ton, Cleveland, but they were generally odd and end lots which sellers were anxious to get rid of and which buyers were just as anxious to obtain. May shipments from Ashland but slightly exceeded 100,000

tons, as against 300,000 tons for the same month in 1892, an indication of the curtailment of production in the Gogebic Range. Furnacemen are firm in the belief that before July they will be able to buy Ores at figures below present quotations, although dealers stoutly deny that this is possible. It is a fact that sellers are holding shipments from the upper lakes close to actual sales, and that mining operations are being correspondingly restricted. The heavy grain shipments from Chicago have made the Escanaba rate for bringing down Ore very firm at 65¢ $\frac{1}{2}$ ton, with a possibility of 70¢ being fixed as the rate very soon. The Ashland rate is still 95¢, while 85¢ is obtained for bringing down Ore from Marquette. About 41,000 tons of Ore were forwarded to the furnaces during the past week, as compared with 21,000 tons for the same week in 1892.

Pig Iron.—The demand continues fair, with Bessemer Irons held firmly at \$13.60 @ \$13.70, and with Gray Forge also in good favor. Furnaces seem well engaged for the next month or six weeks. The general business and financial depression is all that stands in the way of contracts extending far into July and August. Gray Forge is quite firm at \$12.25, Cleveland. Something is being done in Foundry Irons, too, at \$13.75 @ \$14 for No. 1, and \$13 for No. 2, Cleveland. Local dealers cling tenaciously to the belief that better prices are sure to be realized within a few weeks.

Scrap.—With No. 1 Railroad Wrought offered as low as \$12 @ \$12.50 it can be readily understood that the market is dull. Wrought Turnings are quoted at \$6.50 @ \$7 and Cast Borings at \$5.50 @ \$6 $\frac{1}{2}$ ton.

Old Rails.—Nothing in the way of buying or selling is reported. Old Americans are quoted at \$18.50 @ \$19 $\frac{1}{2}$ ton, but these are only nominal quotations and do not represent buying or selling figures. Old Car Wheels are offered very freely at \$14 $\frac{1}{2}$ ton.

Bar Iron.—The mills are busy, but, it is said, only in anticipation of an idle season later on.

Muck Bar.—The demand continues to improve, although prices are no better. An occasional sale of Muck at \$23.75 @ \$24 is reported, and the mills are just now particularly active.

Nails.—There is a fair demand at unchanged prices. Wire Nails are quoted at \$1.45 $\frac{1}{2}$ keg, carload lots, and at \$1.60 in stock. Dealers quote Cut Nails at \$1.35 @ \$1.40 $\frac{1}{2}$ keg from stock.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, Pittsburgh, June 6, 1893.

Thus far indications are that the different wage scales will be ready for presentation to the manufacturers much earlier this year than ever before, and should no serious trouble occur between the manufacturers and the workmen, the new scales will have been formulated and signed before the ones now in force have expired. Already the Wage Committee of the Amalgamated Association have prepared the scale governing rolling mills, or what is known as the Iron scale, and it will be ready for presentation to the manufacturers before this week is out. It is understood that the Steel scale governing Bessemer plants is about made up, and it will be considered by the Amalga-

mated Association immediately after disposition has been made of the Iron scale. As to what changes have been made in these two scales over the ones now in force nothing definite is known. A preliminary meeting of the Conference Committees of manufacturers and the Amalgamated Association was held in this city on Monday. The manufacturers were represented by James McCutcheon of Lindsay & McCutcheon, D. B. Oliver of the Oliver Iron & Steel Company, James M. Bailey of Phillips, Nimick & Co., and James H. Nutt, representing the Mahoning & Shenango Valley Iron Manufacturers' Association. After a discussion lasting several hours the meeting adjourned, merely an interchange of views being had. The Iron & Steel Sheet Manufacturers' Association is in session here to-day, and the principal object of the meeting is to consider the Sheet scale for the coming year. It is altogether likely that within a week or ten days at the utmost it will be known definitely whether the various scales will be adopted without a fight being made by one side or the other. The condition of the Iron and Steel trade does not show any material changes over those noted last week. Business in all directions is restricted very much on account of the financial stringency and also on account of the uncertainty existing over the settlement of the wage scales. Bessemer Pig and Billets for June delivery are fairly active at \$13.50, Pittsburgh, for the former, and \$21.75 @ \$22 for the latter. Wire Nails and Wire Rods are in slow demand at lower prices, and the Rod makers have decided to suspend operations during July for the purpose of ridding the market of surplus Rods, thus opening the way for an improvement over the present unsatisfactory condition of the trade. Structural Material and Plates are in only moderate demand, with prices lower than ever before. Rails seem to be getting worse as far as demand is concerned, and a break in the established price would not be a surprise to those who have closely watched the course of the market recently. Coke operators are discontented over the situation of trade and the irregularity of prices. Should a determined stand for cheaper Coke be made by the furnacemen, and this seems probable, it is not unlikely that lower prices for the last half of the year will be accepted for contracts than was done when contracts for the first half of the year were made. While the old quotation of \$1.90 on board cars at oven still prevails, the actual selling price has been much lower than this for a considerable time.

Structural Material.—Pittsburgh is bidding on about 1500 tons of Shapes for the new syndicate office building in Cleveland, and it is probable the order will be captured by one of the local mills. Outside of this there have been no large lots offered for some little time. A fair demand is going for small lots, but as a whole, the amount of business offering is much below expectations of makers. We quote Beams up to 15 inch at 1.60¢ @ 1.70¢, Angles and Universal Plates 1.60¢ @ 1.75¢, Tees 1.75¢ @ 1.85¢ and Z Bars 1.70¢.

Plates.—Pittsburgh mills have taken considerable business within the last month or two, and this, with orders for small lots coming in, causes a moderate degree of activity. Competition seems to be as keen as ever, and a buyer with a fair order to place, by "shopping around," can often get lower prices than are first offered to him. An order

for Tank Steel, for shipment West, was in this market recently, and one concern that bid 1.55¢, Pittsburgh, was surprised to learn that the order went to a competitor who bid lower. We quote as follows: Tank, 1.50¢ @ 1.60¢ according to order; Shell, 1.75¢ @ 1.90¢; Ordinary Fire Box, 2.25¢ @ 2.50¢; Special, 3¢ @ 3.50¢; Flange, 1.85¢ @ 2¢.

Bars.—Mills continue active, largely on stock, although a good many buyers are anticipating requirements for fear of scarcity of material on account of labor troubles. The tone of the market is firmer, and some mills are holding Steel Bars at 1.60¢, half extras. Bars in the Mahoning Valley are ruling at 1.42 $\frac{1}{2}$ ¢ @ 1.45¢, half extras, at mill. It is announced that the Mahoning Valley Iron Company are preparing plans for the erection of a new Bar mill with modern equipment throughout.

Ferromanganese.—Very little of this material is changing hands, and prices are weak and irregular. We quote 80 % domestic at \$58 @ \$58.50, f.o.b. cars Pittsburgh, with the first named as the ruling price.

Muck Bars.—There has been a fair demand for Muck Bars for the past month or so, the principal buyers being Pipe and Tube makers. No. 1 Muck Bars are lower at this time than ever before in the history of the trade, sales of best grades having been freely made in this market at \$23.75, delivered at buyers' mill. Within the past two weeks two sales have been made, one of 1000 tons and another of 750 tons, at above-named price. Some cheaper grades of Muck Bars have been sold here as low as \$23.50, delivered at buyers' mill.

Steel Rails.—There is nothing new to report this week, very little new business is going and the light demand is being felt at the local mill, where some 50 men employed in the converting department were laid off for an indefinite period last week.

Wire Rods.—We are advised of a contract for about 1000 tons of Rods for shipment up to September which was closed last week at private terms. As announced elsewhere, Rod makers have made an agreement to close down entirely during July, and it is believed that this action will be observed by Pittsburgh makers. For some time past it has been evident that there were more Rods in the market than buyers, and it is hoped that the action of the mills in cutting off production for a month or longer will improve the situation. We quote Wire Rods at \$29, Pittsburgh. The output of Wire Rods at the Beaver Falls Mills for May surpassed all previous records, the output for the month being 5948 tons of finished Rods. The greatest previous monthly run was in March, 1892, when the output reached 5748 tons.

Pipes and Tubes.—A fair demand is going for Boiler Tubes and Merchant Pipe, but outside of these two lines there is little doing. There was a time when large orders for Line Pipe were frequently placed for delivery to natural gas territory in the vicinity of Pittsburgh, but of late little business has come to Pipe and Tube makers from this section. The same is true of the Indiana Gas Belt, which formerly sent a good many orders for Line Pipe to Pittsburgh. The inactive demand has had the effect of making mills more eager for business, and as a result concessions are being offered in the way of favorable prices. Discounts are un-

changed and are as follows: Butt-Weld Black Pipe, 57½%; Butt-Weld Galvanized, 50%; Lap-Weld Black, 67½%; Lap-Weld Galvanized, 57½%. On Boiler Tubes discounts are as follows: 2½ inch and smaller, 65%; 3-inch and larger, 67½%. As intimated above, this list is not being observed, but is being shaded more or less, according to desirability of business.

Wire Nails.—The Wire-Nail market is in an extremely unsatisfactory condition, both as regards demand and prices, and the outlook for any material improvement is not encouraging. A meeting of Wire Nail manufacturers, to take action regarding prices, was held in Cleveland on Wednesday, May 31, but, owing to the unavoidable absence of a prominent concern, nothing was done and the meeting will reconvene in that city to-morrow (Wednesday), the 7th. It is not improbable that some action will be taken looking to improvement in prices. We have reduced quotations on Wire Nails and now quote the market at \$1.40, Pittsburgh or Cleveland, in carload lots, and are advised that \$1.35 has been done under special conditions. The condition of the Wire-Nail market largely reflects that of the Cut-Nail market, although there is a fair amount of new business coming in from small buyers. We continue to quote Cut Nails at \$1.10, base, in Wheeling district. The output of Wire Nails at the Beaver Falls Mills during May was the heaviest in any one month in the history of the plant and amounted to over 62,000 kegs.

Sheets.—Mills continue as busy as ever, principally on orders booked some time ago, although the amount of new business coming in is by no means small. As stated several times, a number of mills are considerably behind in their shipments, and there is more or less complaint on this account from buyers. A meeting of the Iron & Steel Sheet Manufacturers' Association is now in session in this city, and it is the impression that definite action will be taken regarding the wage scale for the coming year. As is well known, this organization does not touch prices in any manner whatever. We continue to quote No. 24 Common Sheets at 2.50¢; No. 26, 2.60¢; and No. 27 at 2.70¢ in round quantities, with the usual slight advance for small lots. Some mills charge an advance of about \$1 per ton on above prices for Soft Steel Sheets. The demand for Galvanized Sheets also continues heavy, the Moorhead-McCleane Company of this city having more business on hand and turning out a larger output than ever before in the history of the firm. We quote Galvanized Best Bloom at 70 and 10% in carload lots, and 70 and 5% in less quantities.

Wire.—There is a moderate demand going for Barb Wire, and we continue to quote Galvanized at \$2.40 and Painted at \$2 in cartload lots. The season, as far as large buyers are concerned, is about over, and nearly all the business now coming in is from the smaller trade. Plain Wire is in moderate demand at unchanged prices, and we quote Nos. 6 to 9 at 1.60¢; Nos. 10 and 11, 1.70¢ and 1.80¢.

Merchant Steel.—The condition of this trade is somewhat of a disappointment, owing to the fact that large buyers, who heretofore have generally covered their requirements by this time, have not as yet bought to any extent. Makers believe that this is due principally to the stringency in the money

market, and also partly to the fact that while prices are extremely low, there is little probability of any advance in the near future. There is a fair amount of business coming in from small buyers, and negotiations are reported as on foot for several season lots, but have not as yet been closed. We quote Open-Hearth Machinery at 1.80¢ @ 1.90¢ and Spring at 1.90¢ @ 2¢; Tool Steel is ruling at 5½¢ and upward, according to quantity.

Scrap Iron and Steel.—Never before in the history of the trade has the demand for Scrap material been as light as it is at the present time. The low prices ruling for Mill Irons and the fact that so many concerns have taken up the use of Steel has had much to do with the falling off in the demand for Scrap material. In the face of the conditions surrounding the trade, nothing but nominal quotations can be given. We make nominal quotations on No. 1 Railroad Wrought Scrap of \$14 per net ton; Cast Iron Borings are hardly ever called for and are worth about \$7 per gross ton; Leaf Springs we quote nominally at \$20, and Coil at \$17, both in gross tons.

Old Rails.—The conditions noted above as existing in Scrap material largely represent the condition of the market as regards Old Iron and Steel Rails. Very little is doing, and when a mill is in the market for either Iron or Steel Rails the buyer can generally come pretty close to getting material at his own price. We make nominal quotations on Old Steel Rails as follows: \$15 @ \$15.50 per gross ton for short pieces, \$14 for long pieces and \$13.50 for mixed lengths.

Connellsville Coke.—Advices from the Connellsville region indicate that there has been a slight improvement within the last month in the demand for Coke. For the week ending May 27 there were 12,055 ovens in blast and 5272 idle, with a total estimated production of 120,281 tons. Compared with the previous week this was an increase in production of 2359 tons. A good many Coke contracts made about the first of the year for six months expire during this month, and blast furnace operators are not inclined to be in a hurry renewing these contracts on present basis. On the other hand, the Coke operators do not feel inclined to make a general reduction in price of Coke, as this would necessitate a reduction in wages, which operators for some reason do not wish to make. A good many contracts for Coke are based at \$1.50 @ \$1.55, while to the smaller buyers Coke men have been charging \$1.60 @ \$1.70. The price of Foundry Coke is reported as being maintained at \$2.15 to dealers and \$2.30 to consumers.

(By Telegraph, June 7, 12.20 p.m.)

Pig Iron.—The price of Bessemer Pig for June delivery is being firmly maintained on a basis of \$13.50, Pittsburgh, with a limited amount of material changing hands. As to what course the market will pursue after July 1 cannot be stated. Should the wage scales be arranged without a strike, and no protracted shutdown occur, it is probable that present prices will be maintained. On the contrary, should there be a long period of idleness which would curtail consumption very materially, prices may recede to some ex-

tent. This uncertainty of the situation is naturally preventing any business being done for late delivery. Gray Forge Iron is in slow demand, and outside brands have been sold in this market on the basis of \$12, Pittsburgh, and even this low price has been shaded on some transactions. Foundry Iron has also weakened in price, and we have reduced quotations slightly. We quote as follows:

Neutral Gray Forge.....	\$12.00 @	\$12.25, cash.
All-Over Mill.....	12.50 @	"
No. 1 Foundry.....	13.60 @	13.85 "
No. 2 Foundry.....	12.60 @	12.85 "
Charcoal Foundry No. 1.....	17.00 @	18.00 "
Charcoal Foundry No. 2.....	16.50 @	17.00 "
Bessemer Pig.....	13.45 @	13.60 "

We note a sale of 2000 tons of Bessemer for June and July delivery at \$13.50, Pittsburgh, and 1500 tons of Bessemer for same delivery at \$13.45 Pittsburgh.

Billets.—A fair amount of Steel is selling for June delivery at prices equal to about \$22 at makers' mill. Buyers do not seem inclined to pay present prices for late Steel, believing that if the wage scale is arranged without trouble present prices cannot be maintained. The closing of the Rod mills during July will reduce consumption to considerable extent. Should a number of Steel plants be idle for extended periods it would mean a scarcity of material and higher prices, but as near as can be learned this is probable with only two or three concerns.

The monthly meeting of the Iron and Steel Sheet Manufacturers' Association was held in the Times Building, Pittsburgh, Tuesday, June 6. Of the 21 firms belonging to the association 19 were represented in person. The New Albany Rail Mill Company, New Albany, Ind., have joined. The principal topic of discussion was the wage scale for the ensuing year and a Conference Committee of seven was appointed to meet a similar committee of the Amalgamated Association as soon as a date can be arranged. The manufacturers' committee consists of J. G. Battelle of the Piqua Rolling Mill Company, Piqua, Ohio; B. M. Caldwell and W. T. Graham of the Aetna Standard Iron & Steel Company, Bridgeport, Ohio; N. E. Whitaker of the Whitaker Iron Company of Wheeling, W. Va.; W. C. Cronmeyer of the United States Iron & Tin Plate Mfg. Company, Demmler, Pa.; B. F. Jennings of Jennings Bros. & Co., Limited, Pittsburgh, and Geo. G. McMurtry of the Apollo Iron & Steel Company, Pittsburgh. As to what changes in the present scale the sheet manufacturers will request cannot be stated, but it is definitely stated that they will endeavor to have some of the extras in the present scale eliminated and will insist that the clause requiring manufacturers to pay 10% extra for rolling sheets No. 22 and lighter be stricken out. The annual meeting of the Tinned Plate Manufacturers' Association of the United States will be held in the Times Building, Pittsburgh,

Pa., to-day. In addition to electing officers the scale of wages governing tin house labor will come up for discussion.

New York.

Office of *The Iron Age*, 96-102 Reade street, }
New York, June 7, 1893.

Pig Iron.—Sales agents generally report a very dull market, although there have been no indications in the territory tributary to this city of the exceptionally low sales for quick delivery and for cash, which are spoken of as having taken place in other markets. From Buffalo comes the report that transactions of this character have been made at prices which would astonish the trade were they to become generally known. The greater part of the order for the East River Gas Company of Long Island City, for about 17,000 tons of Cast-Iron Pipe, has been placed, East and West sharing in the contract. We quote Northern brands at \$14.50 @ \$15.25 for No. 1; \$13.75 @ \$14.50 for No. 2; \$12.25 @ \$12.50 for Gray Forge, tidewater. Southern Iron, same delivery, \$14 @ \$14.50 for No. 1; \$12.75 @ \$13.50 for No. 2. and \$13 @ \$13.50 for No. 1 Soft; \$11.75 @ \$12.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—Importers report that the English producers are asking more money for Ferro, on account of an advance in Ore. They are now quoted £10 per ton. The market here is lifeless.

Steel Rails.—So far as standard sections from mill are concerned the market is lifeless in the East. A feature of growing importance is the selling of Rails fit to relay: Thus within the past ten days there have been placed in this market 12,000 tons of 60-lb Rail; 4,000 tons of 60-lb Rails, and 1,200 tons of 56-lb Rails, at private terms. Conditions influencing the price of this character of material vary so widely that a close quotation is not practicable. It is known, however, that \$19 @ \$21 has been done, while there are reports of even lower figures. Competition on light sections is growing livelier, and relatively low prices are being made. In Girder Rails the mills are fairly well off; but it is a fact, which is conceded, that considerable street railroad work has been withdrawn from the market or has been canceled on account of the financial condition of the buyer, the same being also the case with some Standard Rails. It is reported that the Canadian Pacific has bought 15,000 tons of Moss Bay Rails. It may be of interest in this connection to state that Rails have lately sold as low as £3. 10/ at works in England.

Track Material.—In the absence of any active business prices have been receding, and we now quote: Spikes, 1.80¢ @ 1.90¢; Fish Plates 1.45¢ @ 1.60¢; Track Bolts, Square Nuts, 2.30¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered.

Manufactured Iron and Steel.—No contracts of any consequence have been placed during the week under review. The burning of a part of the works of J. B. & J. M. Cornell is not looked upon in the trade as being likely to materially influence the market. The concern is reported to have been very conservative in taking contracts this season, and it is certain that a good deal of the work can be done by the mills for the firm. We quote: Beams up to 15-inch, 1.75¢ @ 2.00¢; 20-inch, 2.10¢ @ 2.25¢, for round lots; Angles,

1.75¢ @ 1.90¢; Universal Mill Plates, 1.80¢ @ 1.90¢; Tees, 1.90¢ @ 2¢; Channels, 1.85¢ @ 2¢, on dock. Steel Plates are 1.70¢ @ 1.90¢ for Tank; 1.95¢ @ 2.10¢ for Shell; 2.10¢ @ 2.25¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.60¢ @ 1.9¢, on dock, and Common 1.50¢ @ 1.60¢. Soft Steel Bars are 1.50¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.85¢ @ 2¢, and Links and Pins, 1.85¢ @ 2.10¢; Steel Hoops, 1.80¢ @ 1.90¢, delivered; Cotton Ties, 80¢ @ 85¢ per bundle, at mill.

Old Material.—The market for Old Material is pronounced to be in a deplorable condition. The railroads are offering material in considerable quantities and at low prices without finding any buyers, while some of the dealers have been persistent sellers for some time, the ostensible reason being that a reduction or a complete abolition of the duty on Scrap Iron is feared when tariff legislation comes up in Congress. In Old Rails the market has become even more restricted lately, through the fact that the Western mills and notably those in the Mahoning Valley decline to make any purchases in view of the contingency that labor troubles may arise on August 1. Old Iron Rails are offered at \$15 @ \$15.50 and Old Steel Rails at \$12 @ \$12.50, the last sale of a lot of 1,000 tons having been at the lower figure.

Stock Warrants.—Return of stocks, &c., by American Pig Iron Storage Warrant Company, New York, June 2, 1893:

	Tons.
Stock in yard April 30, 1893.....	78,800
Put in yard for 31 days ending May 31, 1893.....	700
Total.....	79,500
Withdrawn 31 days ending May 31, 1893.....	2,800
Net stock in yard May 31, 1893....	76,700

Metal Market.

Pig Tin.—There has been a slight turn for the better in the surface appearances of the market, but the turn looks feeble rather than healthy, suggestive, in fact, of nicely timed manipulation calculated to stiffen the backbone of buyers who are now receiving Tin on old contracts purchased at prices considerably below those at which supplies can be secured at the present time. It is an open secret that requests have been made to delay deliveries on purchases made a month or six weeks ago by consumers who were influenced by the McKinley duty "boom" and that a heroic remedy was necessary to prevent further depression than that which has come about through inevitable workings of the law of supply and demand. Pending the repairing of bridges and other work incidental to defensive operations, the conflicting speculative interests have moved very cautiously and the "bull" party seem to have gained at least a temporary advantage that may help along deliveries on old contracts above referred to. In any event, the course of prices has been turned in some degree and the "bulls" have been quite as aggressive the past few days as the "bears" were a week ago. They lifted prices for prompt deliveries to 19.15¢, and for June to 19½¢ on Tuesday, against 18½¢ and 18.90¢ respectively at the date of our last review, and continued to work the

changes without adding a great deal to their holdings of actual Tin, until 19.35¢ was reached for June, 19½¢ for July and 19.90¢ for August delivery. Then there was more evidence of inclination to sell, but at the close the market looked fairly firm.

Copper.—Immediately after the writing of last week's report, exporters closed contracts for about 1,000,000 lb of Lake Superior Ingot at, it is understood, 11¢ per lb. Since then there has been nothing done outside of ordinary home trade transactions, involving comparatively unimportant quantities. For the present, requirements are being met to a great extent by deliveries on old contracts, and that movement, in turn, prevents any serious accumulation of stock in first hands. This applies also to the cheaper varieties, and keeps the general market fairly steady, despite the rather sluggish condition of new demand. Current prices are about 11¢ for Lake Superior Ingot, 10½¢ @ 10¾¢ for Electrolytic and 10¢ @ 10½¢ for common Casting brands.

Pig Lead.—The upward movement that characterized values last week has given place to a turn in the opposite direction and the market is at present in a somewhat perturbed condition, being affected to greater or lesser extent by financial complications in Western trade centers, as well as extreme reserve on the part of consumers generally. Some few single carloads were sold early in the week at 3.92½¢, but that price was subsequently shaded to 3.90¢, and later on several hundred tons were let go at 3.80¢ for June and July delivery, while the official bullion price receded to 3¾¢. At the close the market was soft, with sellers of round lots at 3.80¢ for July and 3.82½¢ for later delivery.

Spelter.—The Kansas coal mining labor troubles have served to keep the market in a somewhat feverish condition, but no speculative interest has been aroused in this quarter, although late mail advices are indicative of some tendency in that direction in the West at intervals. Eastern consumers have meanwhile manifested unconcern and at this writing the market seems to be quite as flat as it was a week ago. The popular quotation for deliveries at this and common Eastern points is 4½¢, but the chances are that attractive orders could have been filled at a shade less.

Antimony.—Demand has been slow and prices are easy, with Hallett's, quoted at 9½¢ @ 9¾¢, L.X. at 10¢ @ 10½¢ and Cookson's at 10½¢ @ 10¾¢, in wholesale lots.

Tin Plate.—There has not been the slightest improvement in the demand. Spot goods have been taken in moderate quantities only and futures are still practically neglected. Values are rather soft nearly all along the line, yet showing no radical change. Spot quotations are as follows: Coke Tins—Fenlan grade, IC, 14 x 20, scarce; J. B. grade, do., \$5.50; Bessemer full weight, \$5.50; light weights, \$5.10 @ \$5.12½ for 100 lb, \$5 for 95 lb, \$4.90 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60 @ \$5.65; Siemens Steel, IC basis, \$5.75; IX basis, \$6.85. Charcoals—Melyn grade, IC, \$6.50; Crosses, \$8; Allaway grade, IC, \$5.70; Crosses, \$6.90; Grange grade, IC, \$5.80; Crosses, \$7. Charcoal Terns—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.35; M. F., 14 x 20, \$7.25; do., 20 x 28, \$14.50; Dean grade, 14 x 20, \$5.35 @ \$5.37½; do., 20 x 28, \$10.50 @ \$10.70; D. R.

HARDWARE.

Condition of Trade.

THERE IS LITTLE CHANGE in the volume of business since our last report, although there are indications of a somewhat improved demand in the dispatches given below from Chicago and St. Louis, which, to a good extent, represent the condition of things in other leading centers. It is evident that a fair amount of goods is being distributed by the jobbers, but trade on the whole is rather quiet and of less volume than was expected earlier in the year, and the general expectation is that business for the next month or two will be dull. Buyers are placing orders only for pressing and early requirements, the uncertainty in regard to the financial situation being the principal feature of the market at present. Prices are naturally inclined to droop, but manufacturers are wisely refraining from forcing their goods on the market. There is a good deal of complaint in regard to collections, but in this respect the situation is not more unsatisfactory than for several weeks past.

Chicago.

(By Telegraph.)

The Shelf Hardware trade again improved during the past week, Monday's mail being decidedly heavier at the jobbing houses here than had been the case for several months previous. The improved demand has extended to all classes of goods, regular Hardware showing a decided increase, and Builders' Hardware moving much more freely. Trade in seasonable goods is now quite heavy, but staple goods, such as Nails, are still comparatively neglected. Heavy Hardware keeps up unexpectedly well, manufacturing consumers buying better than it was supposed they would this month. Collections show an improvement, but this may perhaps be due to the fact that the first of the month has just come in. The whole situation is better in every respect.

St. Louis.

(By Telegraph.)

Jobbers continue to report a steady improvement in the demand for Hardware, particularly for Shelf Hardware, which is moving in good volume. Orders are not large, it is true, but they come in with astonishing regularity, which would seem to suggest that dealers are adopting a conservative course,

while the financial outlook continues uncertain. Prices, generally speaking, are well maintained with the exception of Barb Wire and Wire Nails, which are considerably weaker. Cut Nails are also showing signs of another drop. Builders' Hardware and Garden Tools are in excellent demand, while the call for Bicycles continues unabated. The Southern trade has been disappointing on account of the floods, and with the exception of Texas, but few goods have been sold in that section. Collections are fair.

Notes on Prices.

Cut Nails.—The market in Cut Nails is weak. The price in the East is represented by the quotation of \$1.05 for carload lots at mill, but it is understood that this figure has been slightly shaded. The weakness developed in Wire Nails has its effect upon Cut Nails, and the manufacturers of the latter are hoping that the Wire Nail manufacturers may be able to reach some understanding by which prices will be put on a better basis. Small lots of Cut Nails from store in New York are held at about \$1.35.

Chicago, by Telegraph.—Cut Steel Nails show no new developments. Manufacturers are not competing so vigorously for orders, and the small volume of trade now coming up in a natural way is taken care of easily by the local makers. Factory lots are nominally quoted \$1.25, but prices are not strong. Small lots are selling from stock at \$1.35.

Wire Nails.—During the past week or ten days Wire Nails have been selling at considerably lower prices than have ruled for a long time. Some round lots have been quoted at \$1.35, f.o.b. mill, and it is even intimated that this figure has been slightly shaded. This recession in price is accounted for in part by the fact that the mills had pretty well cleared up their orders and were desirous, as far as possible, of avoiding the accumulation of stock. The fact that some large jobbing houses had considerable stocks of Wire Nails purchased at old prices, so that they could compete with or undersell the manufacturers, had also its influence in inducing this weakness. The present situation is very unsatisfactory to the manufacturers, and there has of late been a good deal of conference with reference to measures which might be adopted to regulate prices and production. A meeting of the Wire Nail manufacturers is being held at Cleve-

land. It has been decided, we are advised, to shut down the mills during the entire month of July. It is thought that the manufacturers are more disposed to make mutual concessions, with a view to securing a satisfactory arrangement among themselves, than when such an attempt was last made.

Chicago, by Telegraph.—Manufacturers' agents report a larger business in Wire Nails, but this is made up of numerous transactions in carload lots, heavy buyers being conspicuously absent from the market. Prices are somewhat weaker, and while \$1.50 is the regular price on factory lots, concessions have been made by some of the mills desiring to convert their stock on hand into cash. Jobbers report their trade quite light at present, but continue to quote on small lots \$1.65 to \$1.70, making some concession to best buyers.

Barb Wire.—There is little change in the Barb-Wire market. Quotations are on a basis of \$2.45 to \$2.50 for Four-Point Galvanized in carload lots at mill. Small lots delivered in New York are quoted at \$2.70 for Galvanized and \$2.30 for Painted.

Chicago, by Telegraph.—Barb Wire has been in somewhat better demand from factory, but carload prices have weakened to \$2.15 for Painted and \$2.55 for Galvanized. Painted is in much better supply than Galvanized, as the demand for the latter still continues to gain on the former. Jobbers report only a small trade from stock and maintain quotations at \$2.30 and \$2.70, respectively.

Eye Hoes.—In view of the fact that the American Axe & Tool Company are for the time being out of the market on these goods, owing to the destruction of their factory at Douglas, Mass., and the consequent limiting of the supply, somewhat higher quotations are ruling on these goods.

Axes.—Under date May 29 the American Axe & Tool Company announce the withdrawal of quotations on all lines of Axes manufactured by them. We are advised that their sales during the past few months have shown a marked increase over those during the same time last year.

Paragon Rotating Washer.—Olds Wagon Works, Fort Wayne, Ind., are the manufacturers of this Washer, which was described in our last issue. The Washer is sold to the trade at \$42 per dozen.

Bee Smokers.—The Crane and Clark Bee Smokers, manufactured by A. I. Root, Medina, Ohio, were recently illustrated in our columns. The Crane Smoker is sold to the trade at \$14 per dozen and the Clark Smoker at \$4.50 per dozen.

Powder.—Under date June 1, the Hazard Powder Company, 63 Pine street, New York, announce further reductions in the price of rifle and sporting Powder, which, in lots of 1000 pounds and over, one sale, one shipment and to one consignee, is subject to a discount of 10 per cent. in place of 9 per cent. heretofore given. A similar reduction is announced by E. I. Dupont de Nemours & Co., 32 Pine street, and Lafin & Rand Powder Company, 29 Murray street.

Binder Twine.—For the past two or three weeks there has been more or less uncertainty in the Binder-Twine market, resulting largely from the possibility of a shortage. Arrangements have now been made, it is understood, by which the Twine held by banking concerns, as collateral, may be released and put upon the market. The warmer weather for the past few days has increased the importance of prompt shipment of Twine, and the tendency is toward stiffer prices. The withdrawal of the National Cordage Company, as a factor in the trade, has had a tendency to increase the business of outside factories to a considerable extent.

Cordage.—The Cordage market is characterized by a somewhat firmer tone and slightly advanced quotations. The base prices for large lots, f.o.b. factory or New York, are as follows:

	Cents.
Manila.....	8½ to 8¾
Sisal.....	7½ to 7¾
New Zealand.....	6½ to 6¾

Some of the companies connected with the National Cordage Company are re-entering the market. In the meantime negotiations are progressing with reference to a reorganization, but nothing definite in this direction is yet announced.

Glass.—The situation in the Glass market is practically unchanged, and remains about the same as reported last week. The more favorable weather for building has not increased the demand for Glass from factory to any considerable extent, although dealers report an increase in inquiries for Glass for fall delivery. Restrictions in credits are becoming almost universal, and conservative dealers are satisfied with furnishing Glass to only those from whom prompt returns may be expected. The times do not seem favorable for an increase in list prices, especially as importers do not appear disposed to consider propositions made by the National Window Glass Company. The Window Glass involved by the failure of ex Secretary Foster, which, it is stated, amounts to about \$75,000, will proba-

bly be put on the market at much lower prices than the official discounts would allow. The productive capacity of Glass is being decreased by pots and tanks going out each week, which is a condition to be expected at this time of the year. Although the demand for Plate Glass has increased, it is intimated that the stock at the various factories is sufficient to meet the demand for months to come, and production is being curtailed by not starting up factories again by the National Plate Glass Company after stock taking was finished. Quotations remain unchanged as follows: American Window Glass, 2000 boxes at one time, 80 and 10 and 10 per cent. discount; carloads, 400 boxes, 80 and 15 per cent. discount; less quantities than carloads, 80 and 10 per cent. discount. Freight allowed on car lots and over, not to exceed 17½ cents per 100 pounds; less than car lots, f.o.b. at shipping point. French Window Glass, 75 and 10 and 5 per cent. discount. American Plate ranges in price from 50 and 10 and 7½ per cent. discount to 60 and 5 per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

The Presidency of the Hardware Club.

WHEN the Van Wagoner & Williams Company were overtaken by the financial difficulties referred to in our last issue, William H. Williams, who is treasurer of the company, tendered his resignation as a governor and as president of the Hardware Club of New York. A meeting of the governors of the club was promptly called, and held June 1 at the office of the Yale & Towne Mfg. Company, when a minute declining to accept Mr. Williams' resignation was unanimously adopted. A copy of the minute, signed by the governors, was subsequently presented to Mr. Williams, as follows:

In view of the fact that our honored president, William H. Williams, has tendered his resignation as president of the Hardware Club of New York, we, the Board of Governors, hereby unanimously decline to accept such resignation and request him to withdraw it.

We take this action not only from the high personal regard in which we hold him, but because we consider him exceptionally qualified for the position, and recognize his popularity with the trade at large and the high estimation in which he is universally held.

It is needless for us to assure him that he has our unshaken confidence and regard, and while we extend to him our sympathies in the misfortunes which have overtaken the company with which he is connected, we express the hope that these difficulties will soon be successfully overcome.

At the same time we promise him our loyal support in the discharge of his duties as president, and will endeavor to aid him in every way in our power.

R. H. SWAYZE, R. R. WILLIAMS,
PETER MCCARTEE, EUGENE BISSELL,
THOS. F. KEATING, M. C. OGDEN,
ALFRED D. CLINCH, A. G. SHERMAN,

BRACE HAYDEN, JAMES H. KENNEDY,
E. C. VAN GLAHN, W. R. WALKLEY,
CHARLES DALY, J. L. VARICK.

This matter was duly presented to Mr. Williams, from whom the following letter, acceding to the request of the Board of Governors, has been received by the secretary:

14 WARREN STREET, NEW YORK, }
June 6, 1893.

To the Board of Governors of the Hardware Club of New York.—GENTLEMEN: Complying with the wish so generously and kindly expressed in the minute adopted at your meeting on the 1st inst., I hereby withdraw my resignation as a governor and as president of the Hardware Club of New York.

I am profoundly grateful to all of the members of the board for the sympathy, confidence and personal regard manifested toward me at the present time as well as in the past.

Very sincerely yours,
WM. H. WILLIAMS.

The members of the club and the trade at large will be gratified to learn that Mr. Williams thus consents to withdraw his resignation and continue his connection with the club as president, a position for which he possesses exceptional qualifications.

At the same meeting the following gentlemen were elected members of the club:

LYMAN BROWN,
168 Duane street, New York.
HUGH J. GRANT,
261 Broadway, New York.
WILLIAM ALVA MAGILL,
71 and 73 Park place, New York.
M. E. MOORE,
546 West Twenty-third street,
New York.
ALFRED E. ROSE,
71 and 73 Park place, New York.
J. WALTER THOMPSON,
Times Building, New York.

Massachusetts Hardware Dealers' Association.

THE MASSACHUSETTS HARDWARE DEALERS' ASSOCIATION, which was organized a few months ago, continues in a flourishing condition, and the success which the association has thus far met is very gratifying to its members. The meetings have all been well attended, and much progress has been made in carrying out the objects for which the association was organized. The next meeting of the association will be held on June 14.

As of interest to the trade, we take pleasure in giving below the names of the members of the association. It will be observed that many prominent New England Hardware merchants are among the members. The list as given is corrected up to June 1:

ANTHONY S. MORSS, Boston.
HIRAM G. JANVRIN,
M. C. Warren & Co., Boston.
JAMES W. VINAL,
Jas. A. Vinal & Co., Boston.
C. E. CHAMBERLAIN, Boston.
M. A. CHANDLER,
Chandler & Barber, Boston.
D. FLETCHER BARBER,
Chandler & Barber, Boston.

N. P. HAYES,
New Bedford.

CHAS. P. DARLING,
H. M. Darling & Co., Boston.

ELISHA J. NEALE,
Thompson Hardware Co.,
Lowell.

SAMUEL H. THOMPSON,
Thompson Hardware Co.,
Lowell.

A. M. GARDNER,
A. M. Gardner Hardware Co.,
Boston.

JAMES A. FARLESS,
Boston.

SAMUEL A. BIGELOW,
Bigelow & Dowse, Boston.

CHARLES F. DOWSE,
Bigelow & Dowse, Boston.

WILLIAM H. WILKINSON,
A. J. Wilkinson & Co., Boston.

LUTHER H. WIGHTMAN,
Goodnow & Wightman, Boston.

FRANK CHANDLER,
Chandler & Farquhar, Boston.

JAMES B. ROBINSON,
Sanborn & Robinson, Lawrence.

J. A. MUNROE,
Burditt & Williams, Boston.

A. D. GILL,
Boston.

C. M. NICHOLS,
The Hoyt Company,
South Boston.

THOMAS MAYO,
Jamaica Plain.

H. M. SANDERS,
H. M. Sanders & Co., Boston.

L. W. THOMPSON,
Leonard Thompson, Woburn.

GEO. E. TEELE,
Watertown.

E. M. RICHARDSON,
Waltham.

W. E. PLUMER,
W. E. Plumer & Co.,
Somerville.

H. W. RAYMOND,
Gloucester.

JOHN C. HOLDEN,
Holden & Robinson, Hudson.

JOHN H. ROBINSON,
Holden & Robinson, Hudson.

W. E. WHITNEY,
Whitney & Snow, Somerville.

FRANK O. BARBER,
Barber Bros., Newton.

L. W. FERDINAND,
L. W. Ferdinand & Co., Boston.

SAMUEL TRASK,
Trask & Putnam, Peabody.

C. O. TUKEY,
S. S. Tukey & Co., Chelsea.

B. C. PIERCE,
Pierce Hardware Company,
Taunton.

J. B. HUNTER,
J. B. Hunter & Co., Boston.

C. H. CAMPBELL,
Newton.

JAMES P. MACKAY,
Thomas J. Murray, Brookline.

A. J. OSBORNE,
G. E. Russell & Co., Holyoke.

WILLIAM H. WARREN,
M. C. Warren & Co., Boston.

CHARLES S. FARQUHAR,
Chandler & Farquhar, Boston.

STEPHEN C. LOWE,
New Bedford.

W. D. PARLIN,
Natick.

JAMES A. COOK,
South Boston.

JOHN M. CLARK,
Nashua, N. H.

E. C. W. BLISS,
Bliss Bros., Boston.

E. A. LOOMIS,
Belcher & Loomis,
Providence, R. I.

HENRY A. WINSHIP,
Bradford, Vt.

J. CARLTON NICHOLS,
The Hoyt Company,
South Boston.

E. H. SANBORN,
Sanborn & Robinson, Lawrence.

ALFRED W. DE WOLF,
De Wolf & Vincent,
New Bedford.

E. P. LIBBEY,
Libbey, Harlow & Co., Boston.

LOUIS HARLOW,
Libbey, Harlow & Co., Boston.

CHARLES E. ADAMS,
Lowell.

WM. A. BURRELL,
Burrell & Sweet, Melrose.

T. EUGENE BARKER,
Pawtucket, R. I.

JAMES N. FRYE,
Frye, Phipps & Co., Boston.

E. L. RICHARDS,
Frye, Phipps & Co., Boston.

A. M. WILEY,
Frye, Phipps & Co., Boston.

E. H. MANSFIELD,
Woodrough, Mansfield & Co.,
Boston.

T. H. BALDWIN,
Brooks, Baldwin & Robbins,
Boston.

JOHN H. ROBBINS,
Brooks, Baldwin & Robbins,
Boston.

WILLIAM N. IRVING,
Eldridge, Winnek & Irving,
Boston.

GEO. J. MULHALL,
Woodrough, Mansfield & Co.,
Boston.

HENRY C. ORDWAY,
Butts & Ordway, Boston.

F. R. WASHBURN,
Taunton.

JOSEPH WILLIAMS,
Burditt & Williams, Boston.

World's Fair Exhibits.

THE DISPLAY of drop forgings arranged by J. H. Williams & Co., Brooklyn, N. Y., shows ingenuity and excellent taste. The display board is surrounded by heavy molding, and a little below the center of the board is a framed picture of the interior of their works. Above this their trade-mark is surrounded with thumb-screw blanks. Immediately above the trade-mark are a number of Brock's Chain Pipe Wrenches. Underneath the picture the space is filled with Wrenches and other forgings. To the right and left of the center of the display double and single head Wrenches are arranged according to size in four rows extending from the top to the bottom of the board. Between the outside rows of Wrenches and the ends of the board the space is filled with four panels of special forgings arranged in an artistic manner, the patterns suggesting to a large degree wrought-iron work. The general appearance of the display is attractive, while closer inspection does not detract from its interest.

THE RICHMOND CEDAR WORKS of Richmond, Va., exhibit their goods in the Forestry Building, Plot 14. The exhibit consists of about a carload of their goods, such as Buckets, Tubs, Churns, Well Buckets, Stable Pails, &c. The goods are arranged on a pyramid some 18 feet square at base and 17 feet high, covered with black plush. The articles are made of red and white cedar with nickel plated hoops, and the whole effect is very striking. Perhaps the most novel feature of their exhibit is their new Wire Hooped Ware. The wire is electric welded and is referred to as much stronger than the flat hoop. It is sunk in grooves cut around the bucket or tub and cannot fall off.

SPRINGFIELD EMERY WHEEL COMPANY, Bridgeport, Conn., are exhibiting very few of their machines on account of lack of space. The larger machines are unrepresented. They are, however, displaying their heavy Knife Grinder, Surfacing Machine,

heavy Tool Grinder, 26-inch Knife Grinder, Equalizing Bearing Machine, and their new Safety Chuck and Safety Emery Wheels, as well as a full line of Emery Wheels. The exhibit is under the charge of Chas. Magee. The machines are exhibited in operation.

H. H. PERKINS MFG. COMPANY, Ke-wanee, Ill., are exhibiting their goods in the annex to the Agricultural Building, where they display their Boss Two-horse Corn Planter, Perkins Shoveling Board and a full line of the Boss Corn Huskers and Hand Protectors.

NORTON EMERY WHEEL COMPANY, Worcester, Mass., are located in the Machinery Building, Department F, Section 16, Column E53. The space occupied by the display of the company is 37 x 10 feet. Five large emery pillars constitute the chief feature of the exhibit. Three of these are in front and two in the rear. These pillars are constructed entirely of Emery Wheels, and weigh two tons each. They are 15 feet in height, and for a distance of 12 feet are made of Wheels 18 inches in diameter. At this point a 24-inch Wheel is introduced, and thence to the top the pillars are conical, surmounted by what is called a pot ball, 6 inches in diameter. The three front pillars support a sign of the company, the letters on which are made entirely of emery, being 8 inches in height and 2 inches thick. In the rear of the space assigned to the company is a partition 10 feet high. On this partition hundreds of Emery Wheels of different sizes are artistically arranged. Three large showcases are also employed by the firm in displaying their smaller Wheels. The machinery display of the company will include 14 machines, the most important of which is the Walker Cutter and Tool Grinder, which is in operation daily. The Leland, Falconer and Norton Grinders, two styles of the Worcester Twist Drill Grinders, and several 1/2 to 2 inch Emery Wheel Grinders, are also shown. The number of wheels used in the company's exhibit is, we are advised, nearly 50,000.

C. S. OSBORNE & Co., Newark, N. J., have a fine exhibit of their Harness Tools. It consists of 800 different kinds of Tools, and is displayed to good advantage in two handsome mahogany and plate-glass showcases. These showcases have been placed in the Manufactures Building, Section P, Block 4, No. 43, ground floor. In the Government Building is displayed a kit of Tools manufactured by the firm expressly for the Government.

RHODE ISLAND TOOL COMPANY, Providence, R. I., are represented in the northeast corner of Section P, Manufactures and Liberal Arts Building. The exhibit consists of the various articles of the company's manufacture wired upon boards. In this collection are cold-punched Nuts, case-hardened Hexagon Nuts, rough Machine Bolts, Milled and Finished Machine Bolts, Cap Screws, Turn Buckles, Eye Bolts, Machinists' Wrenches, some finished pieces of special work and quite a variety of Drop Forgings. The boards are fastened to a frame work and cover a space of about 9 by 6 feet.

STANDARD TOOL COMPANY, Cleveland, Ohio, are in the west end of Machinery Hall, Section J K 53, at the end of the center main aisle. They have a space 25 x 10 feet, which is fitted up with one large mahogany case, 10 feet square, and three small cases. An elegant display of their Twist Drills, Reamers, Taps and Milling Cutters is thus made. One of their Twist Drill Grinding Machines, run by an electric motor, is also exhibited.

Suggestions on Export Trade.

BELOW will be found valuable information of a practical character culled from a recent report to the State Department on Guatemalan-American trade by Consul-General Samuel Kimberly, who is likewise secretary of legation at Guatemala. With slight variations the greater part of it will apply equally well to a great portion of our export trade, not only in Central and South America, but other quarters of the globe. Many of our manufacturers so far have failed to appreciate the great importance of not only properly packing goods, but also in complying with directions given with orders. Where transportation and handling facilities are crude and labor of the cheapest class the following of such directions is more important than the matter of price. A merchant can make little use of goods that reach him partially destroyed in transit, not to mention customs duties increased, and fines and other penalties incurred by ignoring specific directions. From the report above referred to we make the following extracts:

The agents or travelers who come from Europe—and very many do come—are invariably intelligent, polished men, speaking Spanish in addition to their own language. On the other hand, the very few who have come from the United States—mostly from California—are, for the most part, youngsters, speaking English glibly enough, but there it ends. These drummers find themselves, for the first time, perhaps, encountering obstacles such as they never before encountered, get discouraged and return home to find fault with a people they did not understand—with a people who did not understand them.

AMERICAN PACKERS AT FAULT.

The average packing from the United States for these countries is decidedly bad. At different times merchants wrote to the houses from which goods were ordered: "Please pack so and so," yet the majority of houses will not follow instructions; hence merchandise shipped from the United States is in general very badly packed, to say the least. The average house there packs merchandise for Central America as if the goods were going merely from New York to Chicago. It is positively amusing to see a box marked in English, "Handle with care," as the general language down here is Spanish.

All goods which are shipped to these countries must be most carefully packed. Many merchants here will tell you, "We do not buy goods in the United States, because they do not know how to, or will not, pack the way they ought to be packed."

THE SCIENCE OF EXPORTING.

Following this line of thought, the difficult task to dislodge the Europeans in their control of these markets becomes perfectly plain, more especially so when we take into consideration the superior experience and the greater acquired tact of the European exporter in dealing with his customers across the water over his younger, pushing, but less experienced rival.

The trade of exporting has also its "knack." In the first place, it is necessary to study the ways and man-

ners of our successful competitors or rivals thoroughly. As a general thing it may be taken for a fact that most of the existing larger foreign business houses here are the outgrowth of some agency or branch from a larger European house, started by a junior partner, a relative or other trusted employee. That under such conditions a long credit system should spring into practice is perfectly natural, and that it is a safe one is proven by the general prosperity of the merchants here and the absence of business failures.

Another very interesting class of American exports is the different Agricultural Implements, such as Axes, Hoes, Machetes (or Brush Swords), Picks, &c. The American make of any of the above-named articles is infinitely superior in quality and form to the European article; and still the Indian, from long-acquired custom, sticks to the clumsy European Sheet-Iron Hoe and the primitive European-shaped Axe.

Paying Bills with Local Bank Checks.

BY A WESTERN BANKER.

IN ALMOST EVERY TOWN in the United States of 1500 inhabitants there is a bank, and it is the almost universal custom among business men to keep an account with such bank.

Banks are run for the sole purpose of making money for their owners. Profits are made from two sources—deposits and exchange.

If a banker expected to handle no money but his own capital he could do this without an expensive room and clerks. But he asks the public for deposits, claiming that their money is safer in his vaults, or with him, than if kept in their own stores or offices. While with him it is subject to the owner's check at sight, and the banker renders an accurate account monthly to each depositor of all moneys received and paid out on such depositor's account.

If deposits were simply left in the bank over-night there would be no profit in handling them, but experience proves that the average depositor will leave a running balance from day to day, and 100 or 1000 such balances make a snug sum to loan at a good rate of interest, and here comes in the main source of profit.

The smaller avenue for profit comes in selling drafts upon distant points, and is called "selling exchange."

A dealer in Aurora desires to send some money to a house in Detroit. He buys a draft on a bank in that city, paying his banker a small fee for it.

The banker may have money lying in Detroit against which he draws, or he may have to send funds there to make his draft good, or he may sell his customer a draft upon New York or Chicago where he has funds to his credit; both he and his customer knowing that such a draft will be worth its par value in Detroit.

If funds are sent by express to make the draft good there is but little profit to the banker in the transaction. If funds have to lie idle so that drafts may be drawn against them there is loss of interest on them, and the small

charge made for "exchange" is to cover this.

But of late years the average depositor has begun to demand that he shall be given his exchange free of cost to him, claiming that the profits made upon his balances justify him in making this request.

Country bankers have refused to accede to this request, but they have shown their depositors how they could throw the cost of exchange upon the city jobber. This is accomplished by paying bills in checks upon the local bank, instead of sending a draft worth its face in any money center.

These checks are deposited in his bank by the city merchant. Such of them as are drawn upon points where his bank has connections are credited at par, and sent to such connections to be credited in the mutual accounts. Such checks as are drawn on other points have to be sent direct to the banks upon which they are made for collection and the proceeds to be returned in funds available to the city bank.

The country bank makes a profit upon the transaction in two ways: 1. The money called for by the check has remained in its vaults or control several days longer than it otherwise would. Of course with one check this would be a trivial matter, but with 100 or 1000 it is quite an item, and oftentimes largely increases the daily balances.

2. The country bank can charge the foreign bank a larger fee for remitting the proceeds of the check than it would have thought wise to charge its own customer had he bought the draft to remit. The whole matter resolves itself into this: The country merchant has benefited the country bank at the expense of the city merchant.

The question naturally arises: Can the retailer afford to do this? Admitting that his daily balance in the bank does not justify him in insisting upon drafts free of charge, is it to his interest to push such cost over upon the wholesale merchant?

It seems to me that there can be but one answer to these questions, and that is: No.

It is true that the expense upon any one check is trivial, and were the offenses confined to one man, or even one town, they would not be worth noting, but they are widespread and appear to be growing. Any house doing a large business receives many such checks in its daily remittances, and the charges made for collecting amount to a goodly sum in the course of a year.

These country checks come among the business annoyances that are all the more irritating because they are so very petty, but are continuous. Most men have more respect for a burglar than for a sneak thief. When remittances of this kind are received they are receipted for, and no comments made to the remitter, but there are remarks made in the office that would upset his vanity if he could but get

his ear to the telephone. And very frequently these little matters are remembered when such a man again buys goods of that house, and he pays very dearly for the dime that he saved by sending his own check.

I am not a jobber, nor am I writing this because I am a sufferer from the evil complained of. I am actively engaged in the management of a national bank, and we have jobbers and manufacturers among our customers. I hear their comments upon customers who remit by check on the country bank, and I am positive I would not like to buy goods of houses that had the same opinion of me which I hear them express of these country merchants.

We bankers do our best to save our customers and ourselves from loss in collecting these checks. Oftentimes we send them in a very roundabout way from one section to another, so as to finally get the check to the bank upon which it is drawn without having to pay a fee for collection.

In our mail this morning was a check drawn by a dealer in a little town in Northern Indiana upon his local bank and sent by him to a Gun and Ammunition house in New York. That house deposited it in its home bank. By the New York bank it was sent to a Chicago bank. The Chicago bank's nearest correspondent was a Toledo bank, to whom the check was next sent. That bank sent it to a Cincinnati bank. This bank mailed it to a large town in Indiana, and the bank there sent it to the bank upon which it was drawn, and will have to pay 15 or 20 cents for a draft from that bank.

How large a check do you suppose this was for which all this clerical work was done? Just \$3.88! There was very nearly that amount of labor used in entering it upon books and sending from one bank to the other, while the maker of the check could have sent par funds at a cost of not over 5 to 10 cents.

In to-day's mail are three checks upon country banks of amounts under \$1. They are for 48, 70 and 91 cents respectively. We deduct ten cents upon each as the cost of collecting; have to enter them upon our various books as carefully and frequently as if they were that many hundred dollars, and spend more time over them than their face value would pay for.

Wholesale houses and manufacturers make their bills payable in their own cities, and not at a little country bank. To send them paper that has no standing and no value in the city, to compel them to pay a fee of about 1 per cent. to have this paper turned into available funds, is both unjust to them and unwise upon the part of the one who does it.

The first requisite of the successful merchant is that he shall be a close buyer. The principal element in buying close is to have the good will of the seller, and the way to cultivate this good will is by paying the bill promptly and in full, in funds good for their face where the bill is payable.

Prize Competitions

\$25.00.

Prize Competition No. 27.

SUBJECT:

Local Associations of Merchants.

It has been found feasible to form associations in many places for the purpose of securing more friendly relations among competitors and reaching an understanding in regard to matters of common interest. Among the good results referred to as coming from such associations are the following: Overcoming petty jealousies; cultivating a spirit of fraternity; listing of undesirable customers; an understanding in regard to time of presenting bills; putting in operation early-closing movements; agreement as to the prices at which goods are to be sold; mutual accommodation in supplying goods which one merchant may be temporarily short of, &c. The subject is thus evidently a broad one and of a good deal of practical interest. In discussing it the following points are suggested:

Whether it is desirable to have such associations;

How such associations may be organized;

The objects to be accomplished by them.

It will also be of interest to have any information in regard to the practical working of such associations.

This competition will remain open until July 8, 1893.

Those intending to compete are reminded that it will not be necessary to write long essays, but that comparatively brief and business-like answers will be favorably regarded as meeting the purpose for which these competitions are announced.

The following prizes will be awarded:

First prize.....	\$12.50
Second prize.....	7.50
Third prize.....	5.00

The prizes will be awarded for answers which, in the judgment of the Committee of Award, are most suitable for publication and of the most general interest.

We reserve the privilege of extending the time on any competition in case the contributions received are not of sufficient number or merit for the committee to award prizes. These competitions are open to every one, and it is hoped that there will be a general response from business men. We shall have the privilege of publishing any or all of the contributions received.

Replies are to be received not later than July 8, 1893. They should be addressed as follows:

DAVID WILLIAMS,
96-102 Reade street,
New York.

Prize Competition No. 27.

The committee to whom the contributions in Prize Competition No. 13 were referred have awarded the prizes as follows:

First Prize to E. D. WARNER, Jackson, Mich.

Second Prize to G. H. BURNETT, St. John, N. B.

Third Prize to JAMES D. RICHARDS, Covington, Ky.

Other Competitions which have closed are now in the hands of the Committees of Award, who are giving careful attention to the claims of the different contributions. From the number of these and the evident merit of not a few of them, we are assured that a great deal of valuable information and suggestion will be put at the disposal of the trade.

The Weekly Prize Competitions noted below are now before our readers and remain open until the dates named:

No. 20. (Reopened.) Closing June 10.

A Reliable System for Securing the Correct Charging of All Goods Sold on Credit.

No. 25. Closing June 24.

Show-Window Display.

No. 26. Closing July 1.

To What Extent Are Manufacturers and Jobbers Justified in Selling to Consumers.

No. 27. Closing July 8.

Local Associations of Merchants.

The Todd-Donigan Iron Company's Catalogue.

THE TODD-DONIGAN IRON COMPANY, Louisville, Ky., have just issued a well-arranged illustrated catalogue and price-list, known as their No. 2, bound in leather and cloth, containing 390 pages. The goods shown are only such as are carried in stock, and include Supplies for Mines, Railroads, Machinists, Quarrymen, Blacksmiths, Boiler Makers, Wagon Makers, Fence Builders, Carriage Makers, and Railroad Contractors. The book is provided with an index near the front, while at the back several pages are devoted to tables of weights and measures and dimensions of Bar Iron, Nails, Rails, &c.

Diamond Latch Bolts.

SARGENT & CO., New Haven, Conn., and New York, are putting on the market a line of French Window or Cupboard Catches with their Diamond Patent Anti-friction Bolt, a description of which we gave some time ago in connection with their Diamond Bolt Screen Door Catches. The peculiar formation of the Latch Bolt, together with its Strike Plate or Nosing, is referred to as having the effect of overcoming all friction, thus enabling the Catch to act quickly and to close with remarkable ease. These Cupboard Catches are made in different patterns and finishes, and are referred to in an extra page

which Sargent & Co. have just issued for their catalogue. The list is subject to a discount of 50 per cent.

Trade Items.

MONARCH CYCLE COMPANY, Chicago, Ill., have recently opened a fine salesroom at 280 Wabash avenue, Chicago, where they carry in stock a full line of Monarchs and Cycle Accessories. The company have about 60 feet of plate-glass front which they are using to good advantage in the way of a Cycle display. The room is fitted with upward of 70 electric lights, and their trade-mark is reproduced on the seven different windows in gold and silver leaf.

A. J. JORDAN, the manufacturer of the well-known AAA1 brand of Cutlery, sailed for Europe on the new Cunarder "Campania," which left New York on the 3d inst. Mr. Jordan is proprietor of the East India Works, located at Sheffield, England, and he will spend some time there before returning to this country.

C. E. WOODRUFF, 235 Lake street, Chicago, is now Western agent for the Pullman Sash Balance Company of Rochester, N. Y. He carries a full stock of these goods, and ships direct at factory prices in any quantity desired. The company are making a new line of Steel Spring Hinges, and have also added Showcase Balances.

A. B. CHAPIN, founder and president of the Chapin-Wells Hardware Company, Duluth, Minn., has retired from that concern and **A. M. Marshall**, lately and for many years connected with Morley Bros., East Saginaw, Mich., has purchased an interest in the company. The company have been reorganized under the style of the Marshall-Wells Hardware Company, with the following officers: **A. M. Marshall**, president; **B. Wells**, vice-president; **Fred. S. Parsons**, secretary, and **James McPherson**, treasurer. These persons, with **F. C. Stone** of Saginaw, comprise the Board of Directors.

THE PARRY MFG. COMPANY, Indianapolis, Ind., notice an increase in the number of Hardware dealers who are handling vehicles as a part of their regular stock. We are advised that the following assortment of their vehicles enters largely into the orders from dealers: Spring Buggies, Passenger Wagons, Road Wagons, Surreys and Kollens Carts.

JOHN H. PATRICK, JR., representing the American Tool Company, manufacturers of Tool Chests, 200 West Houston street, New York, has returned from a very successful business trip. He was absent about a month and during that time he called on the jobbers and dealers in St. Louis, Chicago, Detroit, Milwaukee, Cincinnati and other large cities through the West.

THE VANDERBILT SASH BALANCE, manufactured by the Vanderbilt Sash Balance Company, Canandaigua, N. Y., is illustrated in the company's advertisement on another page. This Balance has recently been put on the market, and the manufacturers call attention to the simplicity of its construction, the easy manner in which it may be fitted and the low price at which it is offered.

CHARLES E. LITTLE, Hardware, Tools and Foot-Power Machinery, 59 Fulton street, New York, advises us that a man has been attempting to obtain goods from the trade on written orders for his account. Mr. Little

states that he always uses a printed order, and expresses the hope that the trade will make note of this fact.

HARTMAN MFG. COMPANY, Beaver Falls, Pa., issue a circular announcing that they have become owners of letters patent No. 237,391, granted to **W. R. Reynolds**, October 23, 1883, for improvement in Wire Fences and warning the trade against infringements of such patent, and stating that they have been forced to proceed against dealers handling Fence made in infringement of their rights.

THE HAMILTON, N. Y., plant of the New York Wire Cloth Company was almost entirely destroyed by fire on the morning of the 3d inst.

THE MILLER LOCK COMPANY, Philadelphia, have during the past winter enlarged their plant and materially increased their facilities. They are now moving into their new finishing department, 36 x 50 feet, two stories high. They advise us that during the spring they were constantly behind their orders.

Sales to Consumers.

THE QUESTION as to how retailers can prevent their trade from being supplied by jobbers and manufacturers is not a new one, but it is one of growing importance, as consumers are often in a position where they can buy at lower figures than their local merchants can afford to sell the goods. It is not strange that retailers feel strongly on this subject when they see the sale of goods upon which there should be a fair profit taken from them, or the profit reduced to a point which does not justify them in dealing in the goods.

In some States this trouble is greater than in others, and in some sections of the same State it is more noticeable than in other localities. Merchants doing business near large cities are annoyed more than those in towns more remote, though consumers in farming sections are often the ones who are posted by means of circulars or catalogues in which net prices or discounts are given.

The large number of traveling men are, in the opinion of some, accountable to a considerable extent for the practice of selling goods to consumers. It is impossible for a merchant to buy from every traveler; and in order to make a fair showing in the amount of their sales, the traveling men often solicit orders from consumers. Not so much fault is found in the Implement trade as among Hardware dealers, as it appears to be the general policy of the Implement manufacturers to protect their trade, both in referring purchasers to their agents and in printing only list prices. The selling to consumers is, for the most part, apparently done by small wholesale houses rather than by the large jobbers, the former making sales to consumers at prices too low for the average retailer to carry the goods in stock and compete with them in prices. Fire-arms, Ammunition, Sporting Goods, Builders' Hardware, Blacksmith's and Wagon Makers' Supplies are lines

which are pushed among consumers while Stoves and Wire are also frequently offered.

It has been the practice for some time with the largest manufacturers of house trimmings to solicit the builders' trade, and with better assorted stocks and lower prices they have cut deeply into the trade of retailers. If they confined their sales to contractors of large buildings or blocks of houses, where the advantage of assortment and low prices is expected, the retail trade would not have so much to complain of; but retailers complain that it appears below the dignity of a large manufacturing concern to figure on a set of trimmings for a pair of store doors.

Grangers, Farmers' Alliance men, Patrons of Husbandry, &c., receive catalogues embracing almost everything in the mercantile line from houses catering to this class of trade. Jobbers in Leather and Rubber Belting, canvass and solicit orders from thresher men, saw mills and factories, quoting in some cases within 5 per cent. of what they offer to the trade. Mantel and Grate manufacturers offer inducements to contractors, which makes it impossible for retailers to handle these goods. As a result merchants have been obliged to discontinue carrying many lines of goods which were formerly counted on to yield good profits.

The cutting off of the blacksmith and wagon maker's trade is keenly felt by those whose business in this line was formerly quite an item. Bicycle manufacturers and jobbers appoint farmers, lawyers, clerks, &c., as agents to secure a representation for their wheels in towns where the merchants already have the agency for some rival machine. Some jobbers are not above learning the figures at which a retailer has offered to sell a contractor a bill of goods, and securing the order by cutting the price 5 or 10 per cent. Such cases are, however, doubtless the exception rather than the rule.

There are complaints that some sections of the country are full of solicitors for various kinds of merchandise, including groceries and new specialties, and that the towns are canvassed by agents selling on the installment plan, collecting a stipulated amount each week. These conditions make business unsatisfactory, and are in some sections sapping the life out of the established retail stores.

This is a subject in regard to which we have received many letters from the trade in all parts of the country, and while a few of them are inclined to think that the retailer's difficulties in this matter are overstated, most of them refer to the practice as a growing one, already causing retailers the loss of a good deal of business and promising to be still more troublesome in the future. We give below extracts from some of the letters which have come to us touching on this subject. In these letters our correspondents in some cases refer simply to the annoyance they suffer and in others

suggest a remedy for the evils complained of. The letter which we print below is from an intelligent Hardwareman in California, who refers with some fullness to the condition of things on the Pacific Coast :

It is an indisputable fact that the encroachment of the jobber on the retailer's domain is a growing evil. I am not so well advised as to the extent to which manufacturers carry this practice, having but limited opportunity to judge of it by experience in this part of the country. I am inclined to doubt any serious interference on the part of manufacturers. So far as concerns a remedy, I see none, unless it comes through the retailers themselves by concerted action. In some sections I notice that dealers have formed protective associations, but the great majority have remained apparently indifferent, making little or no effort in their own behalf. The jobber selling the consumer is a practice indefensible on any ground; it is, in fact, a breach of faith, and the trespassing jobbers themselves will hardly pretend to set up any defense for their actions, unless it be in exceptional cases. It is not merely the loss of a sale and ensuing profit that is annoying to the local dealer, but the humiliation he suffers in being snubbed by those whom he has endeavored to impress with his ability to serve.

There is a strong belief with many uneducated people that the retailer is merely exchanging his goods at high profits for their money, and such are ever on the lookout to prove this theory to their satisfaction. If a contractor has bought Shovels at \$10 a dozen and finds the opportunity of placing an order at \$9 with some "pushing" drummer who has sought him out, he figures himself a gainer of \$1 a dozen, not counting risk, expense of freight, transfer, &c. He only sees the difference between \$9 and \$10. It tickles his vanity to possess sufficient "business ability" to accomplish this; henceforth he will probably prefer placing his order in that way regardless of price. Therein lies the mischief—the local dealer's prestige suffers. Diminished profit is not the worst feature. He could better afford being assessed to pay these hungry jobbers than to be humbled in his business standing. Cases come up sometimes where the business cannot be reached by the local dealer, as in case of public buildings or large contracts. Here the jobber can legitimately step in and score a point in his favor by transacting the business through the retailer and allowing him a 5 per cent. or 10 per cent. commission. Could good will be earned any cheaper in any other way? And yet how few are the cases where this is done. The root of this evil seems to lie in lack of business principle. Good resolves are made and a high standard taken, but the almighty dollar has such power that the standard is soon lowered.

If the retailers would take a firm stand and unite in opposition to the usurping jobbers, they would not only do themselves credit, but express just recognition of those jobbing houses who have held aloof from turning their "drummers" into house-to-house canvassers.

Writing from Illinois, one of our subscribers advocates the formation of protective associations and alludes to the department stores as well as the jobbers as interfering seriously with the retailers' trade :

We are in favor of a retail dealers' protective association. If any one needs protection it is the retail Hard-

ware dealer. Our customers are continually receiving quotations from jobbers and manufacturers, and expect us to sell at their prices, &c. We always claimed we could compete with anyone but the parties we buy goods of. A great many jobbers and manufacturers reason like this: We have no customer in that town and we might as well sell the consumer as to let some one else do it. We have known customers to buy Stoves in Chicago of wholesale dealers at regular wholesale prices and of the very men whom we were buying of. It may do them good, but it does not help us any. Parties doing business near a large city have more to contend with than those more remote, as the nearby towns have many trains, and some of them have purchasing agents who make daily trips to the city and buy for Tom, Dick and Harry such goods as they might need. They get a small commission for so doing and they always quote prices. In fact, there are wholesale houses who court their patronage, as they think it is so much added to their trade. Then the department stores cut quite a figure in our line. The only redress is to organize and boycott such concerns. The jobber does not like the retailer to buy of the manufacturer, but he is ready and willing to sell to his customer.

A simple remedy which is suggested by several of our correspondents is alluded to in the following letter from the district of Columbia :

As long as the world goes round I suppose there will be complaints from the source you name. We suffer from it as all do, and there is no remedy that I know of. In my own case where I find that a manufacturer or a jobber solicits both my trade and that of my customer, I say nothing, but place my orders with some one else, unless there is a decided advantage to me in giving them to the "cut throat."

The following letter from a prominent retail house in Indiana refers also to the desirability of organization on the part of retailers for their mutual protection :

I have been somewhat interested in the articles in your journal in regard to the manufacturer and jobber selling direct to the consumer. I notice that some of those who correspond with you seem to think that there is no remedy. I think that there is, and that if every retailer would decline to buy goods from any manufacturer or jobber who sold to the consumer this practice would be broken up. I think that the retailers of this country should form an association for mutual protection and report to a secretary all the jobbers and manufacturers who sell direct to the consumer, and that every member of this association should bind himself not to give an order to such jobber or manufacturer until such a time as they had fully satisfied the association that they had discontinued this practice and would refrain from such transactions in the future. This can be done, and if the leading retailers in this country would form such an organization I feel confident that there could be but one result. The best manufacturers would cater only to the legitimate trade. I hope that this agitation will result in the organization of such an association.

In a letter from an Ohio merchant the trouble encountered from interference with their trade by both manufacturers and jobbers is alluded to in the following terms :

We are annoyed and lose considerable trade by both manufacturer and jobber selling direct to the consumer.

I am troubled more here by an organization styling themselves the Farmers' Alliance. They send to manufacturers and jobbers for Wire, Nails and many other things, and buy them as cheap as I can. They do the retailer an injustice by proclaiming the prices they buy these goods at all through the neighborhood. When our customers come to buy these goods they are not slow in telling the price that such and such a man bought at from the above organization. From an experience as a retailer for 14 years I find a vast increase of traffic between the manufacturer and consumer. I hope the time is near at hand when there will be a decided action taken against this evil.

A Minnesota merchant refers to the matter in the following emphatic terms :

We consider the people who solicit business from and sell to the retailer, and at the same time attempt to dispose of their goods directly to the user, as business pirates. They are on "all fours" with the man who pays a bill with a check when he has no deposit with which to meet it. In our opinion the retailers should devise some concert of action for self-protection. With the combinations of manufacturers on the one hand and organizations of consumers on the other, such as the Alliance among the farmers, the middleman is between the "devil and the deep sea," and thus far with no attempt or suggestion for a remedy to meet the new conditions brought about by the concert of action of the classes he buys from and attempts to sell to. We are pleased that your valuable paper has interested itself in this matter, and if we may suggest that you follow it up and invite opinions as to the best course for the retailers to pursue, as a body, for the maintenance of their rights you will doubtless open the way for better methods if it be possible.

As this matter is obviously one of great practical importance to the retail trade we have made it the subject of a special prize competition, as announced in our last issue, and shall be gratified by a general expression of the views of the trade on the subject, with suggestions as to some practicable remedy. The competition relating to it is, it will be observed, in the following terms :

To What Extent are Manufacturers and Jobbers Justified in Selling to Consumers.

This competition is suggested by the fact that frequent complaints are made that manufacturers and jobbers interfere with the retailer's business by selling to his customers. It is intended to draw out the views of the trade on the subject. In discussing the question the following points may, perhaps, naturally be touched upon :

- The annoyance and injury to which the retailer is thus subjected ;
- What the rights and privileges of the manufacturers and jobbers are in this matter ;
- What it is feasible for retailers to do for their own protection.

This competition will remain open until July 1, 1893. Prizes of \$12.50, \$7.50 and \$5 will be awarded for contributions which, in the judgment of the committee of award, are most suitable for publication and of the most general interest.

Questions About Mexico Answered.

BY WM. H. MAHER, TOLEDO, OHIO.

SINCE MY ARTICLES upon Mexican trade appeared in *The Iron Age* I have had many letters, most of them being about the special business of the writers. Some of them were upon matters of probable interest to others. I have had many of which this is a sample:

Having the Mexican fever, I beg to ask you, *What are the opportunities and chances there for a young man of 30, with \$10,000 to \$20,000 capital?*

The writer of this special letter is the traveling salesman for a large Hardware house in the West.

Of course, no man of judgment would think of going into a venture of this kind just upon the opinion of one who had made a brief pleasure trip there. He would invest a couple of hundred dollars in a trip to Mexico to examine the prospects and conditions for himself, with his own special tastes and education before him.

Speaking generally, my opinion is that there are many openings for just such a young man as the writer of that letter.

The large trade in manufactured goods in the Hardware line that now goes to Germany would come to the United States but for the fact that the Hardware trade of Mexico is largely in the hands of German dealers.

Among miners, foundrymen, manufacturers and the public officials one finds great appreciation of American machines and American mechanical genius.

I discover from letters received from scores of American manufacturers that they are desirous of putting their goods in Mexico, and a young man of business experience, with the capital mentioned above, would have no difficulty in securing goods on consignment, and a sufficiently large assortment to give him all he would care to represent.

The typical Mexican tradesman is illustrated in the incident told me by a Northern traveling man, who was told to send the poorest quality Rubber Belt, because the retailer's customer would the sooner have to buy another.

But the Mexican manufacturer is not a fool; neither is the miner nor the hacienda proprietor; and the dealer who educates the trade to know that he is selling the best goods will succeed in Mexico as he will in Minnesota.

Another question that is asked in every letter is:

Is it not a very unhealthy climate?

I asked this question myself in every city that I visited, from Monterey, at the north, to Merida, in Yucatan; and I always asked Americans or Englishmen, thinking that the natives would, or might, naturally, give a prejudiced answer. There are 2000 to 3000 American residents in Monterey. I met a man in trade there who formerly was in business in Indiana and had for years been a customer of my house.

He told me that Monterey was very healthy to foreign residents and spoke of it as being a health resort.

Three hundred miles south there has been no rain for three and a half years; typhus is very prevalent, not alone among the poor, whose condition is always unsanitary, but with the best classes.

In the City of Mexico are about 3000 foreign residents; the universal testimony is that these have less sickness among them than they had in their own country. Out on the big sewage canal the superintendent told me there was but one death among his 120 men, mostly English, in three years, and very little sickness.

At Vera Cruz and along the coast we heard of sickness and fevers, and I believe that the coast is very dangerous to northern people. In Yucatan I met the agent of an English house who has resided in the vicinity of Merida for 20 years. This is in the hot lowlands, about 30 miles back from the coast, yet he spoke of the climate as being healthy, and said the cool evenings made the hot days bearable.

Is it necessary to speak and understand Spanish to be successful in business in Mexico?

Surely such a question answers itself! How would a Spaniard, who knew no English, succeed in Buffalo?

How long would it take an average American to master the Spanish tongue?

If he went at it "with might and main" he would have a good hold of it in three months; so I was told by railroad men there. It is an easy language to pick up for common use. Of course, it would take time and experience and study to catch the finer shadings of the tongue, but for business purposes it is learned quickly.

Do you think a Tack plant would pay in Mexico; could I get the capital there, and who could I write to for points?

I think a Tack plant would pay, but I am very confident the capital could not be secured there. Mexico is ready to do everything she can to bring capital there, but I do not believe she has caught on to our "boom" idea of giving people capital to come. At least no suggestions of that kind were made to any of our party.

Could you suggest a good city in which to start the Bicycle business in Mexico?

I would open a store in the City of Mexico, where I would sell both wholesale and retail, and then work up trade from there with all other points. The Mexican boy is a rider by instinct, and the little fellows would take to Tricycles and Bicycles, when once started, as a duck takes to water.

At a venture I would say that the country roads are far ahead of ours, the climate being dryer and heavy wagons so little used. City streets are rougher than ours, but not too rough for Bicycle use.

THE MOUNT CARMEL BOLT COMPANY, Mount Carmel, Conn., manufacturers of Stove and Tire Bolts, Rivets, Wash-

ers, Wood Screws, &c., have recently added some new machinery and otherwise increased their facilities for turning out these goods. This is an old established concern, but is under young and lively management and its business is reported as growing.

Price-Lists, Circulars, &c.

NORTHWESTERN MALLEABLE IRON COMPANY, Milwaukee, Wis.: Malleable Iron Castings.

Illustrations are given of Clevises, Whiffletree Hooks, Eye Ferrules, Stake Rings, End Gate Locks, Wear Irons, Pole Tips, Corner Irons, Steps, Wrenches, Picket Pins, Oar Locks, Fork or Shovel Brackets, Rake Brackets, Malleable Iron Trucks, &c.

W. R. OSTRANDER & Co., New York: Electrical Supplies, &c. The ninth edition of their revised catalogue is devoted to Speaking Tube Hardware, Speaking Tubes, Elbows, Mouth-pieces, Bell Alarms, Electrical Supplies, Oral, Electric and Pneumatic Annunciators and Bells, Bell-hanger's Hardware, Pneumatic Call Bells, &c.

THE UNION LOCK COMPANY, Lancaster, Pa.: Descriptive Illustrated Catalogue of Standard Union Padlocks in Bronze, Steel and Iron. We note that Nos. 910, 911 and 912 are now made in Bronze instead of Iron. No. 505 Steel Spring Padlock has, we are advised, been improved in appearance and finish as well as material, at no increase in price. It is made of solid Steel, with Bower-Barff finish on case, and shackle highly polished, while the interior mechanism is now constructed of Bronze. W. Dodman, 103 Chambers street, is the company's representative in New York.

E. T. BARNUM, Detroit, Mich.: Spring Catalogue of Wire and Iron Work. The contents relate to Wire and Iron Work for building and decorating purposes, including Roof Cresting, Weather Vanes, Tower Ornaments, Iron and Wire Fences, Reservoir Vases, Settees, Chairs, Statuary, Trellises, Fountains, Bank and Office Railings, Grilles, Iron Stairs, Stable Fixtures, Elevator Inclosures, Folding Gates, &c.

CHAS. J. GODFREY, New York: Bicycles. The catalogue under date May, 1893, illustrates Lovell Diamond, Eclipse and Sylph Bicycles; also Tricycles, Lanterns, Bells, &c.

C. SIDNEY SHEPARD & Co., Chicago, Ill.: Metals. Their price current under date May 15, is devoted entirely to Metals, Tin Plate, both bright andterne, Galvanized and Black Iron, Soft and Sheet Steel, Wood Co.'s Sheet Iron, Planished and Russia Sheet Iron, Copper, Tin, Antimony, Lead, Solder, Zinc, Babbitt Metal, &c. These goods are illustrated, with prices; the illustrations of Tin Plate, Boxes and Bundles of Sheet Iron being particularly meritorious, and adding much to the appearance of the catalogue.

THE GOULDS MFG. COMPANY, Seneca Falls, N. Y.: Special edition of a new catalogue, anticipating the publication of a complete general catalogue of their whole line. This pamphlet treats of Pumps and Hydraulic Machinery, Pipe, Fittings, Brass Goods, &c., and has 160 pages 7½ x 6½ inches. Several new features have been added which will prove of use to dealer and user. Approximate weights are given in a column opposite each article, which

will be found valuable to both domestic and export trade. Another column indicates which Pumps are suitable for wells of a known depth, giving the total lift and force from water to point of discharge in feet. While a purchaser knows the depth of his well, neither he nor the dealer is always qualified to select a proper Pump. The illustrations are all numbered, but not being placed consecutively, an index to figures is provided in addition to the alphabetical index. A number of tables and other useful information will be found at the back. A complete telegraph cipher will enable rush orders being sent at minimum expense.

OHIO LANTERN COMPANY, Tiffin, Ohio: Lamps and Specialties. The catalogue illustrates Tubular Lanterns, single and double guard Lanterns, Conductors' Lanterns, Street Lamps, Square Tubular Lamps, Side Lamps, Hand Lamps, Burners, &c.

SIDWELL & SABEN CYCLE COMPANY, Boston, Mass.: Waltham Bicycles. Illustrations are given of the Waltham Model 1; Model 2; Ladies' Model 3; Ladies' Model 4; also the Quinton Scorchers, racer pattern, 24 pounds; special roadster pattern, 30 pounds; full roadster pattern, 38 pounds; ladies' roadster pattern, 34 pounds. The manufacturers state that their Cycles are fully up to date in every particular.

THE SILVER MFG. COMPANY, Salem, Ohio: Carriage and Wagon Makers' Tools, Butchers' Tools and Machines, the Ohio Cutters and Carriers. Under the heading of Carriage and Wagon Makers' Tools are included Hub-Boring Machines, Spoke Tenon Machines, Hollow Augers, Blacksmiths' Drills, Tuyere Irons, &c. Under Butchers' Tools and Machines are shown Meat Choppers and Stuffers, Lard and Tallow Presses, Ham Pumps, Steam Jacket Kettles, &c. Cutters include Ensilage, Fodder and Chaff Cutters, also Carriers for Power Cutters. The manufacturers advise us that it is their aim to place a catalogue in every good Hardware and Supply house from Maine to California.

O. J. FAXON & Co., Boston, Mass.: Puritan Bicycles. A catalogue devoted to these machines illustrates the Puritan Roadster and Puritan Scorchers. The manufacturers state that they shall produce only a limited number of wheels this season, but that they expect to have them perfect in every detail, so that the Puritan may attain a reputation for speed and wearing qualities second to none.

It Is Reported—

That H. A. Baldwin of the Hardware firm of A. H. Moon & Co., Redwood Falls, Minn., has sold out his interest to J. A. Pugh, late of Waseca.

That articles of incorporation have been filed by the J. J. Costello Hardware Company of Duluth, Minn. The capital stock of the company is \$100,000.

That J. H. Bell, Franklin, Maine, is erecting an addition to his Hardware store.

That A. N. Smith & Co., Hardware dealers, Presque Isle, Maine, have been making improvements in their store.

That burglars visited the Hardware store of Burks & Cadman, Lincoln, Neb., on the 25th ult., and carried away about \$200 worth of Knives.

That Lamm & Schroeder, Hardware dealers, Mankato, Minn., have been succeeded by C. Schroeder.

That J. H. Bressler, Lebanon, Pa., formerly of the firm of Bressler & Spang, has opened a new Tinware store, in which he will also carry a stock of Stoves, House Furnishing Goods, &c.

That Rassmussen & Frankfeld, Hardware dealers, Crookston, Minn., have been succeeded by H. Rassmussen.

That J. Engesette, dealer in Hardware, Stoves, Guns, Implements, &c., De Forest, Wis., has sold out to M. Thorsness.

That for the fourth time in as many years the Hardware and Farm Machinery store of J. S. Hedges, New Castle, Ind., was entered by burglars on the 28th ult. A fine Shot Gun, ten high-priced Revolvers, a large number of Cartridges, Pocket Knives and Razors were carried off. The value of the booty is about \$200.

That Brown & Fel's Hardware store, Savannah, Ohio, was broken into by burglars on the 28th ult. and \$300 worth of Revolvers, Cutlery, &c., taken away.

That John Schlosser, Hardware dealer, Appleton, Wis., has sold out to Peterson & Koss.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Distinctly new features are conspicuous by their absence. A somewhat livelier interest has been displayed in Paris Green, other insecticides and a few specialties that usually receive special attention at this season of the year, but, taking the leading lines of Paints and Colors, it does not appear that business has been more than fair for the early part of June. As a matter of fact some disappointment was expressed as regards movement of certain leading articles, and the indications were that financial affairs have checked consumption of these goods, as well as other merchandise, to greater or less extent. It is a prominent feature, however, that few changes in prices have taken place, and that steadiness is the rule in the face of somewhat quiet condition of trade.

White Lead.—While not all that could be desired or reasonably be looked for, the distribution has been very good and neither corrodors nor manufacturers of the cheaper class of pigment express complaint, since deliveries on former sales continue to be quite liberal. Trust prices are adhered to in this market and vicinity, although rumors still circulate of special rates being made at some few points where outside competition is more aggressive. On quick process and mixed Lead the line of prices is practically the same as it has been for a month or six weeks past.

Litharge.—There has been a very fair movement in glass-makers' quality for delivery over next fire, but beyond that merely a routine trade. The demand at present is fair, with prices steady, at the range of 5¼¢ @ 7¼¢, as to quantity and quality, less the usual discount.

Orange Mineral.—Demand for this article has been rather slow during the week, but prices are fairly steady, except now and then, when sharp competition in foreign causes a slight shading to secure orders. Domestic is held at 8¼¢ @ 8½¢; French, 8½¢ @ 8¾¢, and 9¼¢ @ 10¢ for German, as to quantity.

Red Lead.—The movement at present is chiefly in deliveries upon old con-

tracts. There has been rather more inquiry from rubber manufacturers; beyond this nothing of importance has transpired. Prices are steady at 6¼¢ @ 7¼¢ for domestic, and 8½¢ @ 9¢ for imported, as to quality and quantity.

Zincs.—The deliveries on former contracts for American Oxide have continued brisk, and last month was in excess of previous years. Values remain steady at 4¼¢ @ 5¢, as to quantity and quality, and are not visibly affected by the fluctuations in raw material. French Zincs are meeting with the usual demand and sell at about former prices.

Colors, &c.—In regular lines of Dry and Oil Colors there has been about the usual movement for the season. The same may be said of ready-mixed Paints. There are no distinctly new features in any department, and very little fluctuation in prices.

Oils and Turpentine.

There have been no striking features in the market for any line of Animal or Vegetable Oils, and apart from more favorable advices regarding the Menhaden catch there is really nothing new to note. Speculative interest has cut no figure in any direction, chiefly for the reason that there is no particular incentive for ventures, and regular trade demand has proceeded in perfunctory manner, with hardly any purchases, except of moderate quantities of goods required to meet current wants. Nothing has occurred calculated to cause greater pressure to sell, however, and prices remain remarkably steady in the face of rather tame condition of trade.

Linseed Oil.—There have been further reports of sales of out-of-town brands of raw Oil at 48¢ and a shade less, but city pressers not only keep their price at 50¢, but report that distribution is fully up to average volume for the season. There is some complaint that new orders have been running rather light recently, however, and back of that are rumors that outside competition is becoming somewhat irritating in this city and vicinity. Still the market preserves fairly good tone, and there is evidence that "bearish" features are given more prominence than they deserve.

Cotton Seed Oil.—Slow business and spiritless demand have been the most prominent features. There is hardly any speculative interest at present, export inquiries are very few, and home trade purchases are extremely commonplace. The offering is no more urgent than it was a week ago, however, and prices have been well supported despite the dull condition of the market. Latest sales were at prices on the basis of 40¢ for prime quality crude and 45¢ @ 46¢ for prime Summer Yellow.

Lard Oil.—Apart from ordinary moderate home trade purchases there has been very little business and the demand at present is slow. City pressers are now well abreast with their orders, and, while quoting old prices, would probably book desirable orders at some concession, particularly for deliveries running well into next month.

Fish Oils.—Better reports from the Menhaden fishing have been received, but not enough Oil has yet been received to fairly establish a market. Sperm and Whale products are in about the same position that they were a week ago. Cod Oil, being scarce, is held firmly at former prices, although rather slow of sale.

Spirits Turpentine.—The market has been somewhat steadier and prices show about ¼¢ @ ½¢ advance from the lowest touched last week. Demand is merely routine, however, and supplies are still quite liberal here and at Southern ports.

I X L Combined Wire Cloth Roller, Cutter and Rewinding Machine.

O. P. Schriver & Co., Pearl and Sycamore streets, Cincinnati, Ohio, are putting the above machine on the mar-

insuring a straight cut. When the cloth is put in the machine the figures on the frame tell the width, thus avoiding mistakes. For rewinding wire cloth the split bar shown in Fig. 1 is used, this fitting in holes provided for that

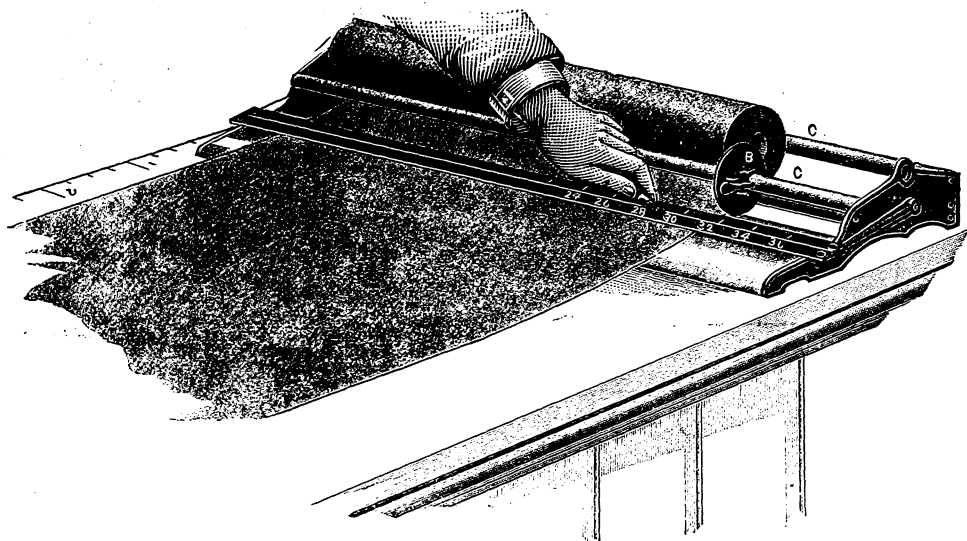


Fig. 1.—Cutting off Cloth.

ket, as illustrated in the accompanying cuts. The machine consists of a frame in which there are three rolls, C C, which revolve when the cloth is laid on them and pulled out, as in Fig. 1. The

purpose in the frame. The manufacturers state that cloth is thus rewound in as compact a form as when it comes from the factory, that 100 feet of cloth can be rewound in a minute and a half,

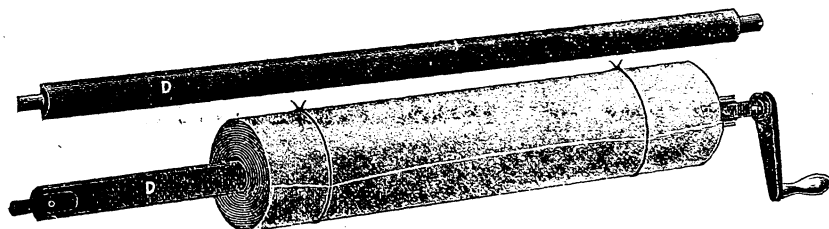


Fig. 2.—Split Bar Roller.

washer B is movable on the front roll, and is designed to keep the wire cloth from running sideways. The cutting bar throws back out of the way while

ready to give to a customer, and that remnants as well as full rolls may be unrolled on the machine without any changing of the rolls. The rack, Fig. 3, is

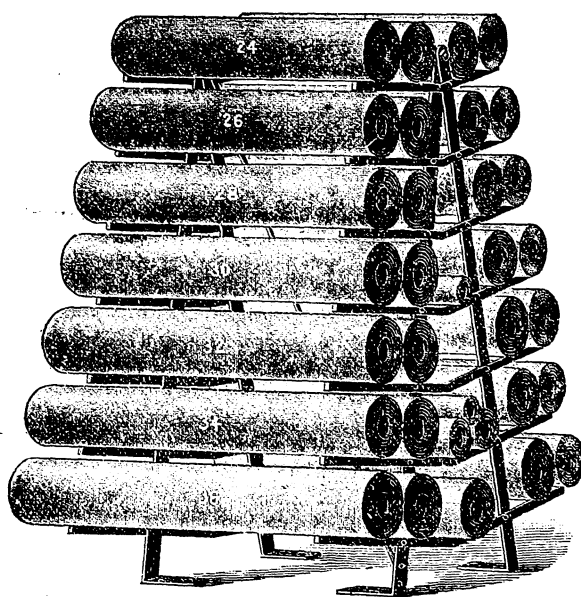


Fig. 3.—All Steel Wire Rack.

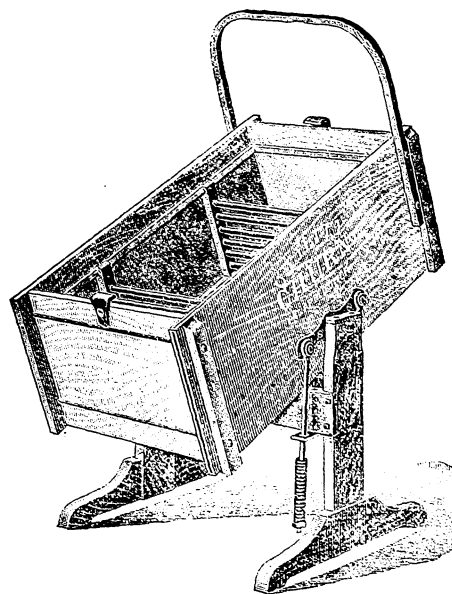
the cloth is being pulled out on the counter the length required, ready for cutting off. The bar has a slot corresponding to a slot in the frame, in both of which the knife runs in cutting, thus

designed to stand immediately in the rear of the machine, taking up a space on the counter of less than 3 feet. It is 4 feet high and will contain, it is stated, 31 full rolls of cloth besides remnants.

Utility Oscillating Churn.

Olds Wagon Works, Fort Wayne, Ind., are putting the churn herewith shown on the market. The manufacturers claim that the churn will make a

large amount of butter for a given amount of cream; that it can be operated with a comparatively small amount of labor, accomplishing this by the action of the compensating springs; that it is cleaned by placing hot water in the churn after it has been used and oscillating the churn as in making butter; that it gives perfect agitation to the cream, making superior granulated butter, and that it is self-ventilating, permitting all gases to escape during churning, and also



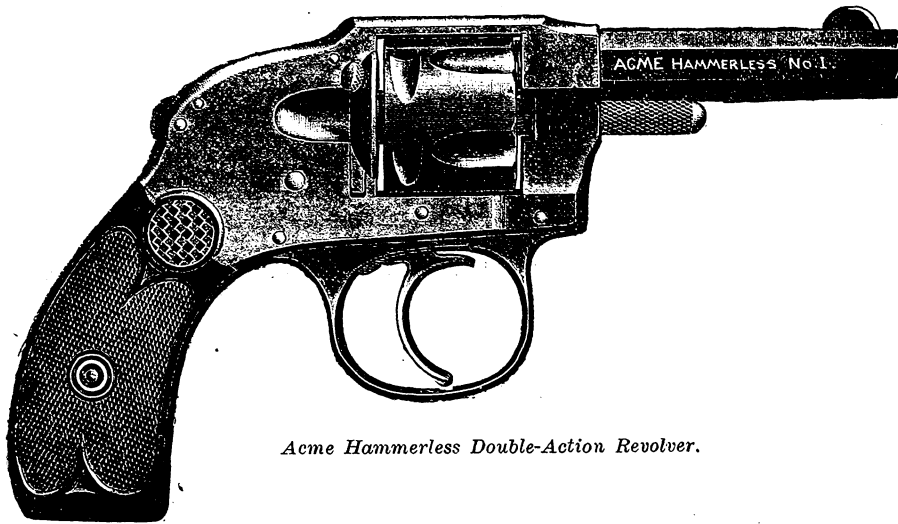
Utility Oscillating Churn.

permitting fresh air to mix thoroughly with the cream while churning. The manufacturers advise us that in competition with other churns in May, 1893, under the supervision of State Agricultural Statistical Agent for Indiana, the Utility churn produced the best results.

JOHN G. ROLLINS, 15 to 25 Whitehall street, New York, has recently been appointed export agent for the English market for the Angite Stove Mat, manufactured by J. L. Brown & Co., Pittsburgh, Pa.

Acme Hammerless Double-Action Revolver.

Hulbert Bros. & Co., 26 West Twenty-third street, New York, have just brought out the above revolver, as shown herewith. It has a rebounding lock, loading gate and safety trigger



Acme Hammerless Double-Action Revolver.

lock, also chambered cylinder to insure accuracy in shooting. They are made in 32's and 38's, and it is remarked that the 32 caliber because of its small frame and compactness recommends itself as a pocket pistol.

Wrist Supporter and Mitten.

The articles illustrated in the accompanying cuts are offered by H. H. Perkins Mfg. Company, Kewanee, Ill. The wrist band is designed to support the

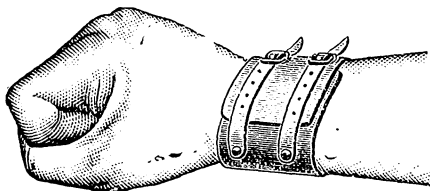


Fig. 1.—Boss Calf Wrist Supporter.

muscles while husking corn or doing other work. It is referred to by the manufacturers as putting in convenient and desirable shape an article suitable to take the place of what a great many farmers have been using. The point is made that with one of the supporters a

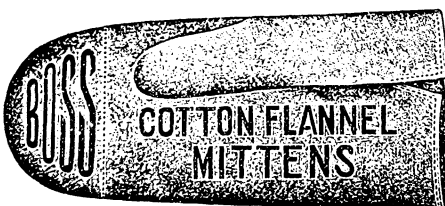


Fig. 2.—Boss Cotton Flannel Mitten.

man can continue work, when without it he would be obliged to remain idle. The mitten is designed to supply a demand for an article, inexpensive, yet furnishing good protection in moderate weather.

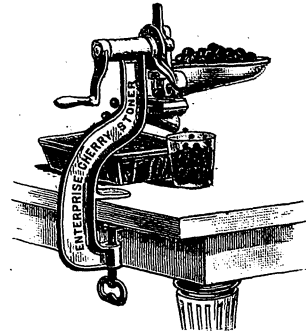
Home Tacks, Class No. 75.

The accompanying cut represents a tack package for counter display, put up by Atlas Tack Corporation, Boston, Mass. The assortment of tacks in each box is: 20 papers 6-ounce, 60 papers 8 ounce, and 20 papers 10-

intendent, is well known to the trade, having until recently been superintendent of one of the largest foundries in St. Louis. C. M. Miller is the secretary of the company.

Enterprise Cherry Stoner No. 12.

The Enterprise Mfg. Company, Philadelphia, Pa., are introducing the above article, illustrated herewith. It consists of a clamping frame, with a platform and feed hopper. On the upper end of



Enterprise Cherry Stoner No. 12.

ounce, their maroon and blue brands being assorted for this package. It is stated that all the sizes are put up of uniform weights, 4 ounces in a paper, and that other assortments, 6 to 12

the clamping frame is an extended eye, through which passes a spindle operated by a crank handle. The end of the spindle fits into a slot or groove in the head of a four-bladed vertical knife ad-



Home Tacks, Class No. 75.

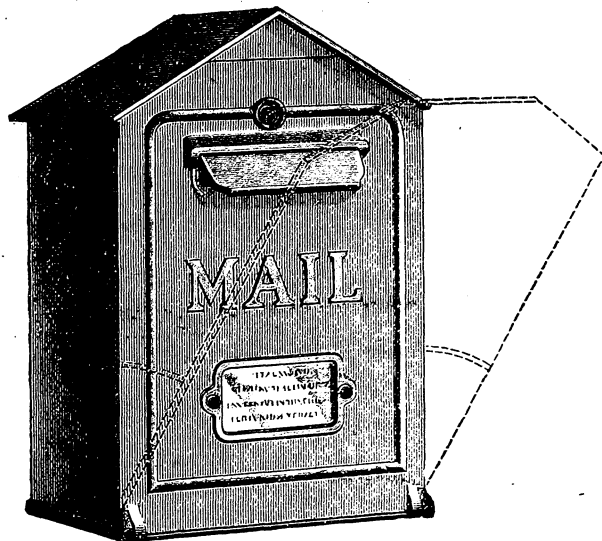
ounces, will be furnished if desired. The tacks in this form are designed to meet the demands for a 5-cent retail package assorted for the trade.

THE BUILDINGS of the Gartland Foundry Company, Cleveland, Ohio, will be completed about the 20th of this month. The company are to make Light Gray Iron Castings a specialty. They start with a large number of orders. Thos. H. Gartland, the super-

justed to a groove immediately in front of the hopper. The operation of the machine is described as follows: By turning the handle the cherries pass from the hopper, the knife takes out the stones, which fall into a vessel, and the knife returns; a sweeper attachment to the spindle follows the plunger and carries the fruit into a receptacle. The manufacturers claim that the machine will stone cherries with the least possible cutting or disfigurement. The stoners are supplied tinned only.

Street Letter Box No. 4.

The Sam'l C. Tatum Company, Cincinnati, Ohio, are introducing their No. 4 letter box, as shown in the accompanying cut. The box is 14½ inches

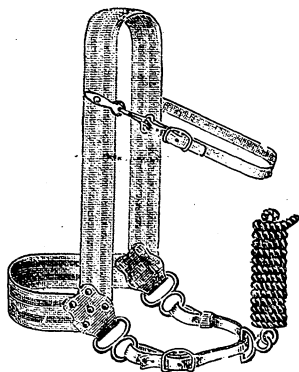


Street Letter Box No. 4.

high, 10 inches wide and 7 inches deep. The door is hinged at the bottom and has a spring tumbler lock which snaps against the upper part of the box. The box is painted green outside and buff inside, and has a convenient place for any notices which it may be desired to attach to the box. It is stated that while the opening for letters is large, the box is put together in such a way as to prevent either rain or thieves gaining ready access to the contents. The point is made that houses having a large correspondence would find the box useful.

Handy Web Halter.

The accompanying cut illustrates an improved web halter put on the market by Covert's Saddlery Works, Farmer, N. Y. The improvement consists in the snap attachment for the throat latch, which, it is remarked, overcomes



Handy Web Halter.

the tediousness and inconvenience of buckling at this point. The snap used for this purpose is their miniature Triumph.

THE J. J. COSTELLO HARDWARE COMPANY, Duluth, Minn., have filed articles of incorporation. The incorporators are Anna M. Costello, Louis Weber, M. Norris, B. F. Howard, W. C. Sargent, Geo. W. Power, C. H. Thornton and J. F. Lucas, the latter of Minneapolis. The capital of the company is \$100,000.

The Miller Lamp.

Edward Miller & Co., 10-12 College place, New York, are putting the lamp on the market shown in Fig. 1. From Fig. 2 it will be seen that there are



Fig. 1.—The Miller Lamp.

ing the wick is described as being so arranged that with the screw movement the wick can be raised or lowered as little or much as desired, or it can be raised or lowered the full extent of the rod with the hand by one movement. Another feature of the lamp is the cone, which, it is stated, is so adjusted that all sweating of the oil is carried back into the lamp, avoiding leaks. The

indicator is a metallic one, hinged so that when filling the lamp it is brought into sight by being raised by the oil, indicating that enough oil has been poured into the lamp. The manufacturers claim that every part of the burner is detachable, so in case of breakage any part can be replaced at a small cost. The lamp is made in two sizes: Nos. 2 and 3. The wicks and chimneys to fit these lamps correspond in size to

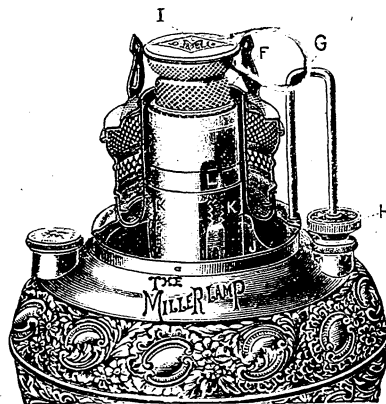


Fig. 2.—Construction of Burner.

those used for the Rochester lamp, No. 2 being the same as No. 2 Rochester, and No. 3 the same as No. 10 Rochester.

Superiority of American Tools.

Consul-General Mason, at Frankfort, promptly transmitted to Washington the following translation of an article which appeared in the Frankfurter Zeitung of April 26:

The manufacture of tools in the United States bids fair to surpass that of all other countries, including even England. The American implement is lighter, handier, and is usually made of better material than has been hitherto employed in Europe. The Americans have excellent iron and unequalled wood. (Hickory hammer handles!) The American tool manufacturers appear to have entirely abandoned European traditions and to have struck out an entirely new path for themselves; hammers, augers, files, sharpening and cutting tools, axes, saws, spades, screws, nails, &c., even the handles of implements, appear to have received quite new forms. In the same way the genius of the American, extremely careful to save all unnecessary labor, uses cast iron far more than it is employed in Europe. A great many machines and parts of tools that we make of wrought iron are there obtained in excellent quality by casting. This has the important advantage that if a part of a machine is broken or worn, another exactly similar can be procured by sending to the factory its catalogue number.

The American always endeavors as far as possible to economize labor. The blacksmith gets along without the man whom we consider absolutely necessary to hold the horse's leg. There is contained in every American an inventor, a mechanic, or an architect. It is marvelous with what simple means they can succeed. As an example of the practical common sense of the Americans we may instance the following: The mason, who with us considers the cutting hammer an indispensable implement, does not regard it a separate tool in America; there the trowel is made of hardened

Current Hardware Prices.

JUNE 7, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....\$ doz \$3.00, 33%
Excelior.....\$ doz \$10.00, 50&10&5
North's.....\$ doz \$10.00, 50&10&5
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, &c.

Anvils—

Single Anvils, \$ 9 1/2.....15&15&5
Peter Wright's.....11&11 1/2
Armstrong's Mouse Hole.....10&10 1/2
Am. Wrought, Horse shoe brand, 11 1/2
Trenton.....10&10 1/2
Wilkinson's.....10&10 1/2
Barnes Mfg. Co.....33&33 1/2

Anvil Vise and Drill—

Miller Falls Co., \$18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise \$8.00.....40&10
Star.....45&45 1/2

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Common Augers and Bits.....70%
Boring Machine Augers.....70%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits, 25&10%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
Snell's Bits.....60&60 1/2
O. E. Jennings & Co., No. 10, extension
Up.....40%
O. E. Jennings & Co., No. 30.....60%
O. E. Jennings & Co., Auger Bits, \$ set,
32&32 1/2 quarters, \$5 No. 30, \$3.50, 25%
Lewis' Patent Single twist.....45%
Fugh's Black.....20%
Fugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Horse Twist Drills.....50&10&5
Standard.....50&10&5
Cleveland.....50&10&5
Syracuse, for metal.....50&10
Syracuse, for wood (wood list).....30&10&5
Cincinnati, for wood.....30&10
Cincinnati, for metal.....45&10

Expansive Bits—

Clark's small, \$18; large, \$26. 35&35&10%
Ives' No. 4, \$ doz \$80.....40%
Swan's.....40%
Stearns' No. 1, \$28; No. 2, \$18.....35&40
Stearns' No. 3, \$48.....20%

Gimlet Bits—

Common.....\$ gross \$2.75@3.25
Diamond.....\$ doz \$1.25.....40&10
Bee.....25&25&5
Double Cut, Shephardson's.....45&45&10
Double Cut, Cat Valley Mfg. Co.....30&10
Double Cut, Hartwell's, \$ gro., \$5.00, 25%
Double Cut, Douglass.....40&10
Double Cut, Ives.....60&60&10

Hollow Augers—

Ives'.....\$ doz \$3.34
French, Swift & Co. (Beecher).....\$ doz \$3.34
Douglass.....\$ doz \$3.34
Bonney's Adjustable, \$ doz \$48.....50%
Stearns'.....20&10
Ives' Expansive, each \$4.50.....50&55
Universal Expansive, each \$4.50.....20%
Wood's.....25&25&10
Cincinnati Adjustable.....25&10
Cincinnati Standard.....25&10

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5
Watrous'.....15&10@15&10&5
Snell's.....25&25&10
Snell's Ship Auger Patt'n Car Bits
15&10@15&10&5

Awl Hafts—See Hafts, Awl.

Awls—

Awls, Sewing, Common.....\$ gr. 85¢@90¢
Awls, Should. Peg.....\$ gr. \$1.50@1.55
Awls, Pat. Peg.....\$ gr. 35¢@38¢
Awls, Shouldered Brad.....\$ gr. \$1.30@1.40
Awls, Handled Brad.....\$ gr. \$2.50@3.00
Awls, Handled Scratch.....\$ gr. \$4.00@4.50
Awls, Socket Scratch.....\$ doz \$1.10@1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands, \$7.00.....\$7.50
First qual., other brands.....6.50
Second quality.....5.50

Axle Grease—See Grease, Axle.

Axles—

No. 1.....\$ 3 1/2@4 1/2, No. 2, 5 1/2@6 1/2
No. 7 to 14.....\$ 4 1/2@5 1/2
No. 15 to 18.....\$ 5 1/2@6 1/2
No. 19 to 22.....\$ 6 1/2@7 1/2
Concord Axles, loose collar.....4 1/2@5 1/2
Concord Axles, solid collar.....5 1/2@6 1/2
National Tubular Self Oiling.....3 1/2@4 1/2

Bag Holders—See Holders, Bag.

Balances—

Spring Balances.....40%
No. 2000 20 30
Chatillon, \$ doz.....\$0.80 0.95 1.75 net
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10

Barb Wire—See Wire, Barb.

Bars—

Crow.....\$ 3 1/2
Iron, Steel Points.....\$ 3 1/2

Basins, Wash—

Standard Fiberware, No. 1, 10 1/2-in., \$1.80;
12-in., \$2.00; 13 1/4-in., \$2.50; 15-in.,
\$3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82. 50&10&5
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custers'.....33&33 1/2

Beaters—Egg—

Dover.....\$ doz \$1.00@1.20
Duplex (Standard Co.).....\$ doz \$1.00
Dover (Standard Co.).....\$ doz \$1.00
Duplex Extra Heavy (Standard Co.).....\$ doz \$3.50
Bryan's.....\$ gross \$14.00
Double (H. & R. Mfg. Co.).....\$ gro. No. 0
\$12.00; No. 1, \$15.00; No. 2.....\$36.00
Easy (H. & R. Mfg. Co.).....\$ gro \$12.00
Triple (H. & R. Mfg. Co.).....\$ gro \$15.00
Spiral.....\$ gro \$4.25 @ \$4.50
Improved Acme (H. & R. Mfg. Co.).....\$ gro \$9.00
Silver & Co.....\$ doz \$5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1;
No. 2, \$2.....20%

Bells—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....70&10%
Kentucky, Sargent's list.....70&10%
Kentucky, Durham.....70&10%
Dodge, Genuine Kentucky.....70&10%
Texas Star.....50&10@50&10&5

Door—

Gong, Abbe's.....33&33 1/2
Gong, Yankee.....45&10
Gong, Barton's.....40&10@50%
Crank, Cone's.....10%
Lever, Sargent's.....60&10
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....25&10
Lever, R. & E. Mfg. Co.'s.....50&10&5
Full, Brook's.....50&10&5

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5
Extra Heavy.....70%
White.....70%
Silver Chime.....33&10%
Globe Cone's Patent.....25&10@35%

Miscellaneous—

Call.....45&50%
Farm Belts.....\$ 3 1/2@3 3/4
Steel Alloy Church and School Bells.....40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70&10@75&5
Standard.....70&5@70&10%
Extra.....60&10@60&10&5
N.Y.B. & P. Co., Carbon.....80%
N.Y.B. & P. Co., Diamond.....50%
N.Y.B. & P. Co., Para.....40%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire

Stoddard's Lightning Tire Upsetters.....15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.,
see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron. 50&50&10%
Morse's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....75&10&5@80%
Genuine Eagle, Norway, list Oct. '84.....80&5@80&10%
Eagle, Norway, list Oct. '84.....80&5@80&10%
Phila. pattern, list Oct. 7, '84.....80&10@80&15
R.B. & W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list).....80&10%
Ives' Patent Door Bolts, 60&10@60&10&5
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wt's Shutter, all iron, Stanley's.....60&10@60&10&10%
Wt's Shutter, Brass Knob.....60&50&5%
Wt's Sunk Flush, Sargent's list.....80&10%
Wt's Sunk Flush, Stanley's list. 50&10&5%
Wt's B. K. Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&5%
Plow.....60&10@50&60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65&65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84.....80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33&33 1/2
Enterprise Mfg. Co.....20%
Clark's.....33&33 1/2

Borax—

Per lb.....9&10%
Boring Machines—See Ma-

chines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Per lb.....24%

Boxes, Miter.

Spiker's Excelsior, 3 in. \$7.50, 4 in.
\$8.50, 5 in. \$13.00, 6 in. \$15.00.....20%

Braces—

American Bit Brace and Tool Co.
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 12, 22, 25, 28.....60&10&5
Nos. 13, 26, 36, 37.....70&10&5
Amidon's:
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40&40&10%
Corner Brace.....40&40&10%
Universal, 8 in., \$2.10; 10 in.....\$2.25
Buffalo Ball.....\$1.10@1.15
Barber's.....50&10%
Saxton's:
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, \$1.10@1.15

Bartholomew's:
Nos. 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70&70&5%
Common Ball, American.....\$1.00@1.10
Fray's Genuine Spotted's.....50&5@50&10%
Fray's Nos. 70 to 120, \$1 to 123. 207 to 414
50&10%
Ives' New Haven Novelty.....70&70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Bee Good.....60&5%
Spotted.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—

Shelf, plain.....65&70%
Sargent's list.....60&10@70&10%
Shelf, fancy.....70&70&10%
Sargent's list.....70&70&10%
Other makes at a wide range of prices.
Bradley Self Brackets.....70&10%

Bright Wire Goods—See Wire.

Broilers—

Hens' Self 1-Inch.....9 10 9x11
Basting. } Per doz. \$4.50 5.50 6.50
New Haven.....50%
We Good.....60&5%
Morgan Odorless.....\$ doz \$12.50
Queen City.....33&33 1/2

Buckets, Well—

Galvanized—

Hill's.....\$ doz 12 qt. \$4.25; 14 qt. \$5.25
Iron Clad.....\$ doz 14 qt. \$4.25@4.50
Helwig's Flat Iron Band.....\$3.75
Helwig's Wired Top.....\$ doz \$4.00

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butcher's.

Brass—

Wrought Brass.....80&80&10%
Cast Brass, Tiebout's.....50%
Cast Brass, Fast.....33&33 1/2
Cast Brass, Loose Joint.....33&33 1/2

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....50&10@60%
Loose Joint, Japanned.....75&75 1/2
Loose Joint, Jap. with Acorns.....75&75 1/2
Parliament Butts.....75&75 1/2
Mayer's Hinges.....75&75 1/2
Loose Pin, Acorns.....75&75 1/2
Loose Pin, Acorns, Japanned.....75&75 1/2
Loose Pin, Acorns, Japanned, Plated Tips.....75&75 1/2

Wrought Steel—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Lt. Narrow.....50&10@60%
Fast Joint, Broad.....50&10@60%
Loose Joint, Broad.....50&10@60%
Table Butts, Back Flaps, &c.....50&10@60%
Inside Blind, Regular.....50&10@60%
Inside Blind, Light.....50&10@60%
Loose Pin.....50&10@60%
Bronzed Wrought Butts.....50&10@60%

Calipers—See Compasses.

Calks, Toe—

Gantier, One Prong, Blunt.....54&54 1/2
Burke's One Prong, Blunt.....54&54 1/2
Burke's Two Prong, Blunt.....74&74 1/2
Burke's One Prong, Sharp.....64&64 1/2

Can Openers—See Openers, Can.

Cans, Milk—

S. S. & Co.: 5-gal., \$2.10; 8-gal., \$3.10;
10-gal., \$3.35 each.....25%

Caps—

Percussion—
Hicks & Goldmark's and Union Metallics
Cartridge Co. \$ 100¢
F. L. Waterproof, 1-10's.....35¢@37¢
E. B. Trimmed Edge, 1-10's.....47¢@50¢
E. B. Grad. Edge, Cent. Fire, 1-10's.....47¢@50¢
Musket, Waterproof, 1-10's.....50¢@53¢
G. D.....57¢@60¢
S. B. Genuine Imported.....57¢@60¢
Eley's E. B.....56¢@58¢
Eley's D Waterproof, Central Fire.....\$1.60

Primers—

Berdan Primers, \$1.00.....\$1
B. L. Caps (Sturtevant Shells) \$1.00.....\$1
All other Primers, \$1.20.....\$1

Cards—

Watson's Cotton, Wool, Horse and
File, list January 23, 1891.....22%

Carpet Stretchers—See Stretchers, Carpet.

Cartridges—

Rim Fire Cartridges.....50&50&5%
Rim Fire Military.....15&23
Cent. Fire, Pistol and Rifle.....25&25&5
Cent. Fire, Military and Sporting.....15&23
Blank Cartridges, except 22 and 32 cal.,
additional 1% to above discounts.
Blank Cartridges, 22 cal., \$1.75.....\$1
Blank Cartridges, 32 cal., \$3.50.....\$3
Primed Shells and Bullets.....15&23
B. B. Caps, Round Ball, \$1.75.....\$1
B. B. Caps, Con. Ball, Swgd., \$2.00.....\$2

Carpet Sweepers—See Sweepers, Carpet.

Casters—

Bed.....Brass.....55&55&10%
Plate.....Others.....60&60&10%
Shallow Socket.....40&10%
Deep Socket.....40&10%
Martin's Patent (Phoenix).....45&10@60&10%
Tucker's Patent, low list.....45%
Payson's Anti-friction.....70&70&10%
Payson's Truck.....60&60&10%
Yale Casters, low list.....45%
Yale, Gem.....70%
Giant Truck Casters.....35%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50&50&10%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%

Cattle Leaders—See Leaders, Cattle.

Cement—

Victor Elastic.....5 m pails \$ 1 50

Chain—

Trace, Wagon and Fancy Chains,
List revised May, 1893.....60&60&10%
American Coil, in cask lots,
3 1/2 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
\$7.60 5.30 4.45 3.80 3.65 3.50 3.40 3.30
Less than cask lots, add 1/4¢ per lb
German Coil, list July 12, 1892.....60&60&10%
German Halter Chain, list July 12, 1892.....60&60&10%

Covert Halter.....80&82%
Cover Traces.....35&35%
Cover Heel Chain.....50&50%
Galy-unized Pump Chain.....50&50%
5-ton lots.....\$ 100 m \$5.50
1-ton lots.....\$ 100 m \$5.75
500-m lots.....\$ 100 m \$8.75
Less than 500 lb.....\$ 100 m \$7.00
Onida Halter Chain.....60&60&5%
Jack Chain, Iron and Brass, list March
10, 1893.....60&60&10%
Barnes' Reinforced Sash.....60&10%
Barnes' Victor Sash.....65%

Chalk—

White, case lots, \$ gr 50¢, small lots, 55

Chalk Lines—See Lines.	
Checks, Door—	
Unity.....	50%
Chisels—	
Socket Framing and Firmer	
F. S. & W.....	
New Haven.....	
Witherby.....	75% to 100%
Mix.	
Ohio Tool Co.....	75% to 100%
Douglas.....	75% to 100%
Buck Bros.....	60% to 100%
Merrill.....	60% to 100%
L. & J. White.....	30% to 50%
Tanged and Miscellaneous.	
Tanged Filmmers.....	50% to 100%
Butchers'.....	\$4.75 to \$5.00
Spear & Jackson's.....	\$5 to 20
Buck Bros.....	30%
Cold Chisels, # D.....	15% to 16%
Chucks—	
Beach Pat.....	each, \$8.00.....20%
Morse's Adjustable, each.....	\$7.00, 30% to 20%
Danbury.....	each, \$6.00, 30% to 20%
Syracuse, Balz Pat.....	25%
Graham Patent.....	33%
Skinner's Patent Chucks.....	33%
Combination Lathe Chucks.....	33%
Universal Lathe Chucks.....	40%
Independent Lathe Chucks.....	40%
Drill Chucks.....	15%
Union Mfg. Co.....	
Victor.....	\$8.50, 25%
Combination.....	40%
Universal.....	40%
Independent.....	40%
Churns—	
Rim Union, each, 5 gal.....	\$3.25; 7 gal., \$3.75; 10 gal., \$4.25.
McDermid Star Barrel Churn, each	6 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25.
Clamps	
E. I. Tool Co Wrought Iron.....	25%
Adjustable, Cincinnati.....	15% to 10%
Adjustable, Hammers.....	15% to 15%
Adjustable, Stearns.....	30% to 30%
Stearns' Adjustable Cabinet and Corner	30% to 30%
Cabinet, Sargent's.....	70% to 10%
Carriage Makers', Sargent's.....	75% to 75%
Carriage Makers', P. S. & W. Co.....	40% to 10%
Eberhard Mfg. Co.....	40% to 10%
Warner's.....	40% to 10%
Saw Clamps, See Vises, Saw Filers.	
Carpenter's, Cincinnati.....	25% to 10%
Barnes' Machinists' Clamps.....	33%
Cleavers, Butchers—	
Bradley's.....	25% to 30%
L. & J. White.....	20% to 30%
Beatty's.....	40% to 40%
New Haven Edge Tool Co.....	40%
P. S. & W. Co.....	33% to 50%
Foster Bros.....	30%
Schulte, Lohoff & Co.....	40% to 40%
Clips—	
Norway, Axle, 1/4 & 5-16.....	65% to 5%
2d grade Norway Axle, 1/4 & 5-16.....	65% to 5%
Superior Axle Clips.....	60% to 70%
Norway Spring Bar Clips, 5-16.....	60% to 5%
Wrought Iron, Elastic Clips.....	50% to 5%
Steel Felloe Clips.....	25%
Baker Axle Clips.....	25%
Cloth and Netting, Wire	
See Wire, &c.	
Cockeyes.....	50%
Cocks Brass—	
Sardware list.....	60% to 2%
Coffee Mills—See Mills, Coffee.	
Collars, Dog—	
Chapman Mfg. Company, new list.....	40%
Redford Fancy Goods Co.....	40% to 10%
Embossed, Gilt, Pope & Stevens' list.....	30% to 1%
Leather, Pope & Stevens' list.....	40%
Brass, Pope & Stevens' list.....	40%
Combs, Curry—	
Fitch's.....	50% to 10%
Rubber, per doz.....	10.00.....25%
American Curry Comb Co.....	33% to 40%
Kohler's Machine Oscillating.....	50%
Kohler's Humane.....	50%
Compasses, Dividers, &c.	
Compasses, Callipers, Dividers.....	70% to 10%
Semis & Call Co's.....	
Dividers.....	65%
Compasses.....	50% to 5%
Callipers, Inside or Outside.....	65%
Callipers, Wing.....	60%
Callipers, Double.....	65%
Callipers, Call's Patent Inside.....	50%
Excelsior.....	50%
J. Stevens & Co's.....	25% to 10%
Starrett's.....	
Spring Callipers and Dividers.....	25% to 10%
Lock Callipers and Dividers.....	25%
Combination Dividers.....	25%
Coolers, Water—	
S. S. & Co., 2-gal.....	\$2.30; 3-gal., \$2.60;
4-gal., \$3.00; 6-gal., \$3.75 each.....	33%
Coopers' Tools—	
See Tools, Coopers'.	
Cord—	
Sash—	
Common.....	# D, 9 to 10 1/2
Patent, good quality.....	# D, 11 to 12 1/2
White Cotton Braided, fair.....	# D, 24 to 25 1/2
Common Russia Sash.....	# D, 12 to 13 1/2
Patent Russia Sash.....	# D, 13 1/2 to 14 1/2
Cable Laid Italian Sash.....	# D, 19 to 20 1/2
India Cable Laid Sash.....	# D, 11 1/2 to 12 1/2
Silver Lake—	
A quality, White, 50#.....	25%
A quality, Drab, 55#.....	25%
B quality, White, 30#.....	10%
B quality, Drab, 35#.....	10%
Sylvan Spring, Extra Braided, Drab.....	30%
Sylvan Spring, Extra Braided, White.....	30%
Bomper Idem, Braided, Drab.....	27% to 28%
Egyptian, India Hemp, Braided.....	26%
Massachusetts, White.....	20%
Samson—	
Braided, White Cotton.....	# D, 37 1/2
Braided, Drab Cotton.....	# D, 42 1/2
Braided, Italian Hemp.....	# D, 40
Braided, Linen.....	# D, 56 1/2
Tate's Solid Braided—	
Hercules, White.....	# D, 25 1/2
Hercules, Drab.....	# D, 30 1/2
Economy Drab.....	# D, 27 1/2
Economy White.....	# D, 22 1/2
Massachusetts—	
Braided, Giant, White.....	# D, 30 1/2
Braided, Giant, Drab and Fancy.....	# D, 25 1/2

Drilled, Crown White, # D, 50#.....	50%
Braided, Crown Drab and Fancy, # D, 55#.....	30%
Wire Picture—	
Braided or Twisted.....	80% to 80% to 15%
Corkscrews—See Screws, Cork.	
Corn Knives and Cutters	
See Knives, Corn.	
Crackers Nut—	
Table (E. & B. Mfg. Co).....	40%
Blake's, Patern, # doz.....	\$2.00.....10%
Turner & Seymour Mfg. Co.....	50%
Acme.....	
Japanned, # gro., \$30.....	50%
Nickel Plated, # gro. \$30.....	10%
Cradles—	
Grain.....	50% to 20% to 50% to 2%
Crays—	
White Crays, # gross.....	70% to 8%
D. M. Stewart Mfg. Co.....	
Metal Workers', # gross, \$1.75.....	25%
Rolling Mill, # gross, 2.50.....	25%
Railroad, # gross, 2.00.....	25%
Soapstone Pencils, # gross, 1.00.....	25%
See also Chalk.	
Creamery Pails—See Pails, Creamery.	
Crow Bars—See Bars, Crow.	
Curry Combs—	
See Combs, Curry.	
Curtain Pins—	
See Pins, Curtain.	
Cutters—	
Meat—	
Dixon's, # doz.....	40% to 5%
Nos. 1 2 3 4	
\$14.00 \$17.00 \$19.00 \$30.00	
Woodruff's, # doz.....	40% to 5%
Nos. 1 2 3 4	
\$100 \$150 \$18.00	
Hale's Pattern, # doz.....	70%
Nos. 11 12 13	
\$27.00 \$33.00 \$45.00	
American.....	30%
Nos. 1 2 3 4 B 6	
\$5 \$7 \$10 \$25 \$60 \$200	
Enterprise.....	25%
Nos. 10 12 22 32 42	
Each.....	\$3 \$2.50 \$4 \$6 \$15
Great American Meat Cutter.....	30% to 50%
Nos. 112 116 118 120 122	
Each.....	\$2.00 \$2.75 \$3.00 \$3.50 \$4.00
Miles' Challenge, # doz.....	45% to 45%
Nos. 1 2 3	
\$22.00 \$30.00 \$40.00	
Home No. 1, # doz.....	55% to 10%
Draw Cut, each.....	
Nos. 5 2 6 8	
\$50 \$75 \$80 \$225.....	20% to 25%
Beef Sheavers (Enterprise).....	20%
Little Giant (P. S. & W. Co.).....	40%
Chadborn's Smoked Beef Cutter, # doz.....	\$66.00
Slaw and Kraut—	
Tucker & Dorsey Mfg. Co.....	
Slaw Cutters, 1 Knife, # gross.....	\$21.00
Slaw Cutters, 2 Knife, # gross.....	30.00
Kraut Cutters.....	40%
Tobacco	
Champion.....	20% to 10%
All Iron.....	\$4.25
Nashua Lock Co's, # doz.....	\$13.00, 50% to 55%
Wilson's.....	55%
Sargent's.....	# doz., \$24.00, 55% to 10%
Acme.....	# doz., \$20.00, 40%
Washer—	
Smith's Pat.....	# doz., \$12.00, 20% to 10%
Johnson's.....	# doz., \$11.00, 33%
Penny's, # doz., Pol. \$14, Jap'd, \$16, 55%	
Appleton's.....	# doz., \$16.00, 60% to 10%
Bonney's.....	# doz., 30% to 10%
Cincinnati.....	25% to 10%
Dampers, &c.—	
Dampers, Buffalo.....	40% to 10%
Buffalo Damper Clips.....	40% to 10%
Crown Damper.....	40% to 10%
Excelsior.....	40% to 10%
Diggers, Post Hole, &c.—	
Samson, # doz.....	\$34.00.....25% to 25%
Fletcher Post Hole Augers, # doz.....	20% to 20%
Eureka Diggers.....	# doz, \$12.00 to \$13.00
Vaughan's Post Hole Auger, # doz.....	\$8.50 to \$9.50
Kohler's Little Giant.....	# doz., \$13.00
Kohler's Hercules.....	# doz., \$13.00
Kohler's Invincible.....	# doz., \$13.00
Kohler's New Champion.....	# doz., \$8.00
Scheider.....	# doz., \$13.00
Cronk's Post Bars, # doz.....	\$80.00, 50% to 50%
Gibbs' Post Hole Digger.....	# doz., \$15.00
Gibbs' National.....	# doz., \$12.00
Gibbs' Columbia.....	# doz., \$13.00
Gibbs' Imperial.....	# doz., \$7.50
Shimer's Hollow Handle.....	# doz., \$24.00
Dividers—See Compasses.	
Dog Collars—See Collars, Dog.	
Door Checks—	
See Checks, Door.	
Door Springs—	
See Springs, Door.	
Drawers.	
Money.....	# doz., \$14 to \$20
Waddell's Improved, # doz.....	\$15.00
Drawing Knives—	
See Knives, Drawing.	
Drills and Drill Stocks—	
Blacksmiths' Self-Feeding, each.....	\$7.50, 20% to 15%
Blacksmiths' Self-Feeding, each.....	\$7.50, 20% to 15%
Preast, P. S. & W.....	40% to 10%
Breast, Wilson's.....	30% to 5%
Breast, Millers Falls.....	each \$3.00, 25%
Breast, Bartholomew's.....	each \$2.50
Ratchet, Merrill's.....	20% to 20%
Ratchet, Ingersoll's.....	20% to 25%
Ratchet, Parker's.....	20% to 20%
Ratchet, Whitney's.....	20% to 10%
Ratchet, Weston's.....	20% to 25%
Ratchet, Moore's Triple Action.....	25% to 30%
Ratchet, Curtis & Curtis.....	\$11.00, 30%
Whitneys Hand Drill, Plain.....	20% to 10%
Adjustable, \$12.00.....	20% to 10%
Automatic Boring Tools.....	\$1.75 to \$1.85
Chicopee Automatic Drill.....	20% to 10%
Goodell Automatic Drills.....	40% to 5%
Twist Drills—	
Cleveland.....	50% to 10%
Diamond, W. & B.....	50% to 10%
Graham's Pat. Groove Shank.....	50% to 10%
Morse.....	50% to 10%
New Process.....	50% to 10%
Standard.....	50% to 10%
Syracuse (Meta list).....	50% to 10%

Drill Bits or Bit Stock	
Drills—See Augers and Bits.	
Drill Chucks—See Chucks.	
Dripping Pans—	
See Pans, Dripping.	
Drivers, Screw—	
Douglas Mfg. Co.....	20% to 20%
Disston's.....	50%
Buck Bros.....	50%
Stanley B. & L. Co's.....	60% to 10%
No. 64, Varnished Handles.....	65% to 10%
No. 86.....	70% to 10%
Sargent & Co's.....	
No. 1, Forged Blade.....	60% to 10%
Nos. 20, 40 and 60.....	60% to 10%
P. S. & W.....	70%
Knapp & Cowles.....	60% to 20%
No. 1.....	60% to 10%
No. 3.....	60% to 10%
Nos. 4 and 00, Acme and Ideal.....	50% to 5%
Stearns'.....	50% to 10%
G. & Parsons.....	25% to 10%
Champion.....	30% to 33%
Clark's Pat.....	30% to 33%
Crawford's Adjustable.....	30%
Ellrich's Socket and Ratchet.....	25% to 25%
Allard's Spiral, new list.....	25%
Kob's Common Sense.....	# doz., \$6.00
Syracuse Screw-Drive Bits.....	30% to 30%
Screw Driver Bits.....	# doz., 50% to 75%
Screw Driver Bits, Parr's.....	# gross, \$6.25
Pray's Hol. H. dle Sets.....	No. 3, \$12.00, 45%
P. D. & Co's All Steel.....	50%
Cincinnati.....	25% to 10%
Buck Bros' Screw Driver Bits.....	37% to 5%
Goodell's Automatic.....	50%
Mayhew's Black Handle.....	60%
Mayhew's Monarch.....	45% to 10%
C. T. Williamson Wire Novelty Co.....	50%
Egg Beaters—See Beaters, Egg.	
Egg Poachers—	
See Poachers, Egg.	
Electric Bell Sets—	
See Bells, Electric.	
Emery—No. 4 to No. 54 to Flour, CF.	
48 gr.....	150 gr. F.F.F.
1/2 kegs, # D.....	4 1/2 5 2 1/2
1/4 kegs, # D.....	4 1/2 5 2 1/2
1/8 kegs, # D.....	5 1/2 5 1/2 3
10-# cans, 10.....	6 6 1/2 5
in case.....	6 6 1/2 5
10-# cans, less than 10.....	10 10 7 1/2
Enameled and Tinned Ware—See Ware, Hollow	
Escutcheon Pins—	
See Pins, Escutcheon.	
Escutcheons—	
Door Lock.....	Same dis. as Door Locks.
Brass Thread.....	60% to 10%
Wood.....	25%
Expanded Metal—	
List No. 5.	
Lathing.....	10%
Refring, Painted Sheets.....	20%
Netting, Painted Sheets.....	20%
Door Mats, Galvanized.....	25%
Window Guards, Paneled.....	15%
Tree Guards, Paneled.....	15%
Extractors, Lemon Juice—	
See Squeezers, Lemon.	
Fasteners, Blind—	
Mackrell's, # doz.....	\$1.00.....20% to 20%
Van Sand's Screw Pat, \$15 # gr.....	60% to 10%
Van Sand's Old Pat, \$15 # gr.....	55% to 10%
Austin & Eddy No. 2008.....	# gr., \$9.00
Quincy Gravity.....	# gr., \$9.00
Zimmerman's.....	50% to 10%
Faucets—	
Fenn's.....	40%
Fenn's Cork Stops.....	33%
Star.....	50%
Frary's Pat. Petroleum.....	60%
B. & L. B. Co.....	
West's Lock, Open and Shut Key.....	50%
Star, Metal Plug, new list.....	40%
Lockport's Metal Plug, reduced list.....	60%
Metallic Key, Leather Lined.....	60% to 10%
Cork Lined.....	70% to 70%
Burnside's Red Cedar.....	50%
Burnside's Red Cedar, bbl. lots.....	50% to 10%
John Sommers'.....	
IXL, 1st quality, Cork Lined.....	50%
Diamond Lock.....	40%
Perfection, Fla. Red Cedar (in boxes).....	40%
Boss Metallic Key.....	50%
Reliable Cork Lined.....	60%
O. K. Brand, Red Cedar Cork Lined.....	50%
No Brand, Red Cedar (in bbls.).....	50% to 10%
Western Pattern Metal Key.....	40%
No Brand Metal Key.....	40%
Self Measuring.....	
Enterprise, # doz.....	\$36.00.....20%
Lane's # doz.....	\$36.00.....25% to 10%
Felloe Plates—	
See Plates, Felloe.	
Fibre Ware—See Ware, Fibre.	
Fifth Wheels—	
Derby and Cincinnati.....	45% to 5%
Brewster.....	50% to 5%
Files—	
Domestic—	
Nicholson Files, Rasps, &c.....	60% to 10%
Nicholson (X.F.) Files.....	25%
Nicholson's Royal Files (Seconds).....	75%
(extra prices on certain sizes.)	
American.....	60% to 10%
G. & H. Barnett (Black Diamond).....	60% to 10%
Acme.....	60% to 10%
Eagle.....	60% to 10%
Other makers, best brand.....	60% to 10%
Fair brands.....	70% to 10%
Second quality.....	80% to 80%
Heller's Horse Rasps.....	60% to 7%
Chelsea Horse Rasps.....	50% to 10%
Acme Horse Rasps.....	60% to 10%
Trojan Horse Rasps.....	60% to 10%
Imported—	
Butcher's.....	Butcher's list, 20%
Stubbs.....	Stubbs list, 25% to 30%

Fixtures, Grindstone—	
Sargent's Patent.....	70% to 10%
Reading Hardware Co.....	80% to 10%
P. S. & W. Co.....	60% to 10%
Fluting Machines—	
See Machines, Fluting.	
Fluting Scissors—	
See Scissors, Fluting.	
Fodder Squeezers—	
See Squeezers, Fodder.	
Forks—	
Hay, Manure, &c. Asso. List, 70% to 70% to 50%	
Hay, Manure, &c. Phila. List, 60% to 60% to 10%	
Plated, see Spoons.	
Frames—	
Saw—	
White Vermont.....	# gro., \$9.00, 10% to 10%
Red, Polished and Varnished.....	\$1.50, 25%
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.....	33% to 10%
Warner's Screen Corner Irons.....	33% to 10%
Stearns' Frames and Corners.....	25% to 25%
Cortland.....	40% to 40%
Phillips' Window Screen Frames.....	65%
Bonanza Window Screens.....	50% to 50%
Empire Fancy Screen Doors.....	# doz., \$12
Freezers Ice Cream—	
White Mountain.....	60% to 60%
Granite State.....	65% to 65%
Arctic.....	70% to 70%
American.....	60%
Buffalo Champion.....	65% to 65%
Shepard's Lightning.....	65% to 65%</

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Brittan, Graham & Mathes, list Jan. 1890.
 Plate, 60x10x10 1/2 60x10x10 1/2
 Barnes Mfg. Co. 40x40x10 1/2
 Yale 40x40x10 1/2 net prices
 Delta Flat Key 30x
 Bomer's Night Latches 15x
 Brooklyn Latches 50x10
 Warner's Burglar Proof 1/2 doz \$3.00, 60x

Padlocks—

List June 10, 1891.
 Norwich Lock Mfg. Co., old list 50x2x
 Yale Lock Mfg. Co.'s net prices
 Eagle 40x
 Eureka, Eagle Lock Co. 40x2x
 Bomer's Nos. 0 to 91 40x
 Bomer's Scandinavian, &c., Nos. 100 to 500 15x
 A. E. Deitz 40x
 Champion Padlocks 40x
 Hotchkiss 30x
 Star 60x
 Horseshoe 50x
 Barnes Mfg. Co. 40x40x10 1/2
 Nock's 30x
 Scandinavian 90x40x
 E. T. Fraim's Keystone Scandinavian, Nos. 119, 120, 130 and 140 90x10x
 Other Nos. 65x
 Ames Sword Co. up to No. 150 40x
 Ames Sword Co. above No. 150 50x
 Slaymaker, Barry & Co.
 No. 1010 line 90x5x
 No. 41 line 60x5x
 No. 61 line 60x5x
 No. 21 line 75x10x

Sash, &c.—

Clark's No. 1, \$10; No. 2, \$8 1/2 gr 33x
 Ferguson's 33x
 Victor 80x10x2x
 Walker's 10x
 Attwell Mfg. Co. 25x33x
 Reading 60x40x10x10 1/2
 Hammond's Window Springs 40x
 Common Sense, Jap'd, Cop'd & Brzd 40x
 Common Sense, Nickel Plated 40x
 Universal 30x
 Kempshall's Gravity 60x
 Kempshall's Model 60x60x10x
 Corbin's Daisy, list Feb. 15, 1888 70x
 Payson's Perfect 60x10x10x
 Hugunin's Sash Balances 25x5x2x
 Hugunin's New Sash Locks 25x5x2x
 Ives Patent 60x10x5x60x10x10x
 Fish (Liesche's pat.), No. 100, gr. 8 1/2
 No. 105, gr. \$10. 60x
 Davis, Bronze Co. 60x
 Champion Safety list January, 1893 70x
 Security 70x
 Grant, list Jan., 1892 70x5x
 Wolcott's 60x10x5x
 Monarch 50x

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles 1/2 doz, \$1.75; 1/2 gross \$17.00

Machines.**Boring—**

Without Augers. Upright. Angular.
 Douglas 5.50 \$6.75 50x
 Snell's, Rice's Pat. 5.50 6.75 40x10x10 1/2
 Jennings 5.50 6.75 45x10x10 1/2
 Other Machines. 2.50 2.75
 Phillips' Patent with Auger. 7.00 7.50
 Miller's Falls 7.50 25x

Fluting—

Knox, 4 1/2-inch Rolls 3.25 each 35x
 Knox, 6-inch Rolls 3.50 each 35x
 Eagle, 3 1/2-inch Rolls 3.25 35x
 Eagle, 4 1/2-inch Rolls 3.25 35x
 Crown, 4 1/2 in. \$3.50; 6 in. \$4.00; 8 in. \$4.50 each 35x
 Crown Jewel, 6 in. \$3.50 each 35x
 American, 5 in., \$3.00; 6 in., \$3.40; 7 in. \$4.50 each 35x
 Domestic Fluter 1.50
 Geneva Hand Fluter, White Metal 1/2 doz \$12.25
 Crown Hand Fluter, Nos. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$8.25 30x
 Shepard Hand Fluter, No. 85, per doz \$15.00 40x
 Shepard Hand Fluter, No. 110, 1/2 doz \$11.00 40x
 Shepard Hand Fluter, No. 95, 1/2 doz \$5.00 40x
 Combined Fluter and Sad Iron 1/2 doz \$15.00 30x

Holting—

Moore's Hand Holst, with Lock Brake 20x
 Moore's Anti-Friction Differential Pulley Block 20x
 Emery's Mfg. Co. 25x
 Sure Grip Steel Tackle Blocks 25x

Washing—

Anthony Wayne, 1/2 doz, No. 1, \$42; No. 2, \$38; No. 3, \$42.
 Wayne American 1/2 doz \$38.00
 Western Star 1/2 doz, No. 2, \$39; No. 3, \$39.
 Welsell 1/2 doz \$54.00
 Fair and Square 1/2 doz \$42.00

Mallets—

Hickory 20x10x20x10x10 1/2
 Lignumvite 20x10x20x10x10 1/2
 B. & L. Block Co., Hickory & L. V. 30x30x10

Mattocks—Regular list.

60x10x60x10x5x

Measures—

Standard Fiberglass, No. 1, peak 1/2 dozen, \$8.50; 1/2 peak, \$3.00.

Meat Cutters—

See Cutters, Meat.

Menders, Harness—

Per doz \$2.00

Milk Cans—See Cans, Milk.**Mills—****Coffee—**

Box and Side, List Jan. 1, 1888. 60x60x10x
 Net prices are often made which are lower than above discount.
 American, Enterprise Mfg. Co., list Jan. 17, 1893 20x
 The Swift, Lane Bros. 30x
 Waddell's New Box Mills, Ideal Brand, New List 60x

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Best Machines: 10-in., \$4; 12-in., \$4.50; 14-in., \$5; 16-in., \$5.50; 18-in., \$6
 Low-Grade Machines:
 10-in., \$3; 12-in., \$3.25 14-in., \$3.50 each

Muzzles—

Safety 1/2 doz, \$3.00, 25x

Nails—

Cut and Wire. See Trade Report.
 Wire Nails, Papered.
 Association list, May 1, 1892. 80x10x10x5x
 Tack Mfrs.' list 70x5x70x10x10x
 Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos. 6 7 8 9 10
 American 33x 34x 34x 34x 34x net
 Ausable 25x 25x 25x 25x 25x
 Clinton, Fin. 19x 17x 16x 15x 14x 30x10x2x
 Essex 28x 26x 25x 24x 23x
 Lyra 19x 17x 16x 15x 14x 40x10x
 Snowden 19x 17x 16x 15x 14x 40x10x
 Vulcan 23x 21x 20x 19x 18x 25x
 Northwest'n 25x 23x 22x 21x 20x 25x25x5x
 A. C. 25x 23x 22x 21x 21x 25x10x33x4x5x
 C. B. K. 25x 23x 22x 21x 21x 25x33x4x10x
 Maud S. 25x 23x 22x 21x 21x 40x10x5x
 Champlain 28x 26x 25x 24x 23x 40x5x5x2x
 Saranac 23x 21x 20x 19x 18x 40x5x2x
 Champion 25x 23x 22x 21x 20x 40x10x10x
 Capewell 19x 18x 17x 16x 15x 30x5x
 Anchor 23x 21x 20x 19x 18x 35x
 Western 23x 21x 20x 19x 18x 50x
 Empire Bronzed 13x14x 10x

Picture—

Brass Head, Sargent's list 60x60x10x
 Brass Head, Combination 50x10x10x
 Porcelain Head, Sargent's list 50x10x10x
 Porcelain Head, Combination list 40x10x10x
 Niles' Patent 40x

Nail Pullers—See Pullers, Nail.**Nail Sets—See Sets, Nail.****Nut Crackers—**

See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Hot Pressed. Square. Hex.
 Cold Punched. 5.00 6.50 off list
 In packages of 100 lb, add 1-10¢ lb
 net; in packages less than 100 lb, add 1/4¢ lb, net.

Oakum—

Best or Government 1/2 doz \$6 3/4 7 1/4
 U. S. Navy 1/2 doz \$5 1/2 6 1/2
 Navy 1/2 doz \$6 1/2 7 1/2

Oil Tanks—See Tanks, Oil.**Oilers—**

Zinc and Tin 65x10x70x5x
 Brass and Copper 50x10x60x10x10x
 Malleable, Hammers' Improved, No. 1, \$3.60; No. 2, \$4.00; No. 3, \$4.40 10x10x5x
 Malleable, Hammers' Old Pattern, same list 45x
 Prior's Pat. or "Paragon" Zinc 60x10x10x
 Olmstead's Tin and Zinc 60x
 Olmstead's Brass and Copper 60x
 Broughton's Zinc 60x
 Broughton's Brass 50x
 Steel, Draper & Williams 60x

Openers, Can—

Messenger's Comet 1/2 doz \$3.00, 25x
 American 1/2 gross \$2.75 \$3.00
 Duplex 1/2 doz 25x 15x20x
 N. Y. B. & P. Co. 1/2 doz \$3.75, 20x
 No. 4, French 1/2 doz \$2.25, 55x60x
 No. 5, Iron Handle 1/2 gr \$6.00, 45x60x
 Eureka 1/2 doz \$2.50, 10x
 Sardine Sissors 1/2 doz \$2.75 \$3.00
 Star 1/2 doz \$2.75
 Sprague, No. 1, \$2.00; 2, \$2.25; 3, \$2.50 40x
 Excelsior, No. 1 \$2.50; No. 2, \$1.50 40x
 World's Best 1/2 gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00 50x10x10x
 Universal 1/2 doz \$3.00 55x55x
 Domestic 1/2 doz \$2.00 45x
 Champion 1/2 doz \$2.00 50x

Packing, Steam—**Rubber—**

Standard 70x70x10x
 Extra 60x60x10x
 N. Y. B. & P. Co. Standard 50x
 N. Y. B. & P. Co. Empire 18x14x20x
 N. Y. B. & P. Co. Salamander 25x
 Jenkins' Standard 1/2 doz 80x 25x25x5x

Miscellaneous—

American Packing 10x11x 1/2 doz
 Russia Packing 14x 1/2 doz
 Russia Packing 15x17x 1/2 doz
 Cotton Packing 15x17x 1/2 doz
 Jute 7x8x 1/2 doz

Pails—

S. S. & Co. 18-qt., \$7.00; 20-qt., \$7.25

per doz 5x

Galvanized—

Quarts 10 12 14
 Hill's Light Weight, 1/2 doz \$2.75 3.00 3.25
 Hill's Heavy Weight, 1/2 doz 3.00 3.25 3.75
 Helwig's 2.50 2.75 3.00
 Sidney Shepard & Co. 2.35 2.85 3.05
 Iron Clad 2.50 2.75 3.00
 Fire Buckets 2.75 3.25 3.50
 Buckets—See Well Buckets.

Indurated Fiber Ware—25x

Star Pails, 12 qt. 1/2 doz \$4.20
 Milk, 14 qt. 1/2 doz \$5.40
 Stable, 14 qt. 1/2 doz \$6.00
 Fire Pails, deep 1/2 doz \$4.80
 Fire Pails, round bottom 1/2 doz \$5.40

Standard Fiber Ware—

Water Pails, 12 qt., 1/2 doz \$3.60 Plain, Deor'd
 Dairy Pails, 14 qt., 1/2 doz 4.00 4.50
 Fire Pails, No. 1, 12 qt., 1/2 doz 4.00
 Fire Pails, No. 2, 14 qt., 1/2 doz 4.50
 Sugar Pails 5.50 6.00
 Horse Pails 4.50
 Buggy Pails 3.50
 Slop Jars (bal. trap) 7.00 8.50
 Chamber Pails, 14 qt. 6.00 7.00

Pans—

Dripping 1/2 doz \$5 1/2

Large sizes 1/2 doz \$6 1/2

Silver & Co. (Covered) 40x

Fry—

Standard List:
 No. 1 1 2 3 4
 1/2 doz \$3.00 \$3.75 \$4.25 \$4.75 \$5.25
 No. 2 5 6 7 8
 1/2 doz \$6.00 \$7.00 \$8.00 \$9.00
 Polished, regular goods 75x75x10x
 Acme Fry Pans 60x60x

Dust—

Steel Edge, No. 1 1/2 doz \$1.75

Roasting and Baking—

Columbia, S. S. & Co.: Nos. 10, \$2; 20, \$2.25; 30, \$2.50 each 50x

Paper and Cloth—

Sand and Emery

List April 19, 1888 60x10x50x10x5x

Sibley's Emery and Crocus Cloth 30x

Parers—

Apple 1/2 doz \$4.75

Baldwin 1/2 doz 5.25

Bonanza 1/2 doz 5.00

Daisy 1/2 doz 4.50

Dandy 1/2 doz 7.00

Eureka 1/2 doz 4.25

Family Bay State 1/2 doz 12.00

Favorite 1/2 doz 5.00

Gold Medal 1/2 doz 4.00

Ideal 1/2 doz 4.00

Improved Bay State 1/2 doz 27.00 40.00

Lodge Star 1/2 doz 4.50

Monarch 1/2 doz 13.50

New Lightning 1/2 doz 5.50

Orion 1/2 doz 4.00

Penn 1/2 doz 4.00

Perfection 1/2 doz 4.00

Pomona 1/2 doz 4.00

Raining Table 1/2 doz 4.00

Turn Table 1/2 doz 4.50

Victor 1/2 doz 13.50

Waverly 1/2 doz 4.00

White Mountain 1/2 doz 4.00

72 1/2 doz 4.25

78 1/2 doz 7.00

Potato—

White Mountain 1/2 doz \$4.50

Altrich Combination 1/2 doz \$5.50

Hoover 1/2 doz \$13.50

Saragosa 1/2 doz \$5.50

Pencils—

Faber's Pencils? high list 50x

Faber's Round Gilt 1/2 gr \$5.25

Dixon's Lead 1/2 gr \$4.50

Dixon's Lead 1/2 gr \$6.75

Dixon's Pencils 1/2 gr \$6.75

Dixon's Pencils 1/2 gr \$6.75

Pencils, Soapstone—

See Crayons.

Pickers, Fruit—

Prize Fruit Pickers 50x

Picks—

Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00. 60x10x60x10x10x

Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—

Bow

Humason, Beckley & Co.'s 60x10x

Sargent & Co.'s, \$17 and \$18 60x10x

Peck, Stow & W. Co. 50x10x50x10x5x

Curtain—

Silvered Glass 1/2 net

White Enamel 1/2 net

Escutcheon—

Iron, list Nov. 11, 1885. 50x10x60x10x5x

Brass 60x60x5x

Pipe, Wrought Iron—

List April 13, 1893.

14 and under, Plain 67x10x10x

14 and under, Galv 60x10x

14 and over, Plain 67x10x10x

14 and over, Galv 67x10x10x

Boiler Tubes, list Oct. 24, 1892 66x10x

Casing, list Nov. 16, 1892 52x10x

Inserted Joints Casing, list Nov. 16, 1892 47x5x

Steel Boiler Tubes 27x5x

Cold Drawn Seamless Steel Tubing 50x

Planes and Plane Irons—

Wood Planes

Molding 40x40x10x

Bench, first quality 45x45x10x

Bench, second quality 50x50x10x

Bailey's (Stanley R. & L. Co.) 50x10x

Iron Planes—

Bailey's (Stanley R. & L. Co.) 50x10x

Miscellaneous Planes (Stanley R. & L. Co.) 25x10x

Steers' Iron Planes 50x50x5x

Meriden Mal. Iron Co.'s 50x50x5x

Davis' Iron Planes 50x50x5x

Birmingham Plane Co. 60x60x5x

Sage & Co. Self-Setting 20x10x10x

Chaplin's Iron Planes 50x50x5x

Sargent's 60x60x10x

Standard Tool Co. 50x50x5x

Plane Irons—

Butcher's 55.00 \$5.55 to 2x

Buck Bros 50x

Auburn Thistle 30x10x

Ohio 30x10x

Sandusky 25x

L. & J. White 50x10x

Stanley R. & L. Co. 50x10x

Plates—

Felloe 1/2 doz \$6 3/4 1/2

Pliers and Nippers—

Button's Patent 60x

Hall's No. 2 5 in., \$13.50; No. 4, 7 in., \$21.00 1

Presses—

Fruit and Jelly—
Enterprise Mfg. Co. 25¢
Bemis doz \$3.50
Shepard's Queen City 40¢
Silver & Co. doz \$2.75

Pruning Hooks and Shears—See Shears.**Pullers Nail—**

Beranton doz, \$18.00, 33¢
Curtis Hammer doz, \$9.50
Giant, No. 1 doz, \$18.00, 10¢
Giant, No. 2 doz, \$15.00, 10¢
Pelican doz, \$9.00, 25¢
Eclipse Each, \$2.00, net
Economy doz, \$6.00

Pulleys—

Hot House, A. W. & Co. 60¢@70¢
Japanned Screw 60¢@10¢
Japanned Side 60¢@10¢
Japanned Clothes Line 60¢@10¢
Hay Fork, Solid Eye, 4.00; Swivel, 4.50 60¢@10¢
Hay Fork, "Anti-Friction," 5 in. solid, 5.70 60¢@10¢
Hay Fork, "F" Common and Patent Bushed 20¢
Hay Fork, Tarbox Pat. Iron 20¢
Hay Fork, Reed's Self-Lubricating 40¢
Hay Fork, Moore's Anti-Friction 5 in. Wheel, 12.00 40¢
Shade Rack 45¢
Tackle Block (See Under Mortise).
Common Sense 60¢
Empire 60¢
Ideal, Nos. 2, 4, 10 & 15, 30¢ less 1¢
Acme doz net.
On bbl. lots extra 5¢
Ideal, Nos. 25 and 55 doz. 22¢ net.

Pumps—

Clifton, Best Makers 60¢@10¢
Pitcher Spout, Best Makers 67¢@70¢
Pitcher Spout, Cheaper G'ds. 75¢@75¢@10¢

Punches—

Saddler's or Drive, good doz, 80¢@85¢
Bemis & Call Co.'s Cast Steel Drive, 5.00
Bemis & Call Co.'s Springfield Socket, 5.50
Spring, good quality doz, \$2.50, \$2.60
Spring, Leach's Pat. 15¢
Bemis & Call Co.'s Spring 50¢@55¢
Bemis & Call Co.'s Check 55¢
Solid Timmers, P. S. & W. Co., doz, \$1.44 55¢
Timmers' Hollow Punches, P. S. & W. Co. 20¢@25¢
Rice Hand Punches 15¢
Avery's Revolving 40¢
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches 20¢@25¢
Niagara Solid Punches 55¢

Rail—

Sliding Door, Wrt Brass doz, 35¢, 40¢
Sliding Door, Bronzed Wrt Iron, 4 ft, 7 ft
Sliding Door, Painted, 4 ft, 7 ft
Barn Door, Light, 1 in. 1/2, 3/4, 1 in. 1/4
Per 100 feet \$2.00 2.50 3.10, 10¢
B. D. for N. E. Hangers Small. Med. Large.
Per 100 feet \$3.15 2.70 3.25 Net
Terry's Steel Rail ft, 4¢
Victor Track Bars, 7 1/2 ft, 50¢@55¢
Carrier, double braced, Steel Rail 30¢@40¢
Foot 30¢@40¢
Lundy Parlor Door, Planed Edge, 4 ft, 7 ft
Moore's Steel Rail 25¢@10¢
Moody Steel Rail ft, 6¢ 45¢

Rakes—

Cast Steel, Association & Co. 70¢@70¢@5¢@2¢
Cast Steel, outside g'ds. 70¢@70¢@5¢@2¢
Malleable 70¢@70¢@5¢@2¢
Gibbs' Lawn Rake doz, \$4.90
Gibbs' Canton Lawn Rake doz, \$3.75
Gibbs' Acme Lawn Rake doz, \$3.75
Gibbs' Favorite Lawn Rake, doz, \$3.90
Gibbs' Crown Lawn Rake, No. 1 doz, \$4.90; No. 2, \$5.40
Onelda Lawn Rake doz, \$6.00
Fort Madison Prize Bow Brace and Feetless 65¢
Fort Madison Steel Tooth Lawn Rake \$6.00 25¢

Razors—

J. R. Torrey Razor Co. 20¢
Westonholm and Butcher, \$10 to 4 10¢
Jordan's A. A. I. new list Net
Galvanic doz, \$15.00
Electric Cutlery Co. Net
Campbell Cutlery Co. 50¢

Razor Strops—

See Strops, Razor.

Rings and Ringers—**Bull Rings—**

Union Nut Co. 55¢
Sargent's 75¢@10¢
Hotchkiss' low list 30¢
Humason, Beckley & Son 70¢@10¢
Peck, Stow & W. Co., 50¢@10¢@50¢@10¢
Elrich Hdq. Co., White Metal, low list, 50¢@60¢@10¢

Hog—

Top of the Hill Ringers doz \$2.00
Top of the Hill Ringers doz \$1.25
Hill's Improved Ringers doz \$1.25
Hill's Old Style Ringers doz \$1.25
Hill's Tongue Ringers doz \$3.00
Hill's Rings doz \$3.00
Perfect Rings doz \$3.00
Perfect Rings doz \$2.15@2.25
Blair's Hog Ringers doz \$2.00
Blair's Hog Ringers doz \$2.00
Champion Ringers doz \$2.00
Champion Ringers, Double doz \$2.00
Brown's Ringers doz \$2.00
Brown's Ringers doz \$1.15@1.25
Electric Hog Ringers doz \$1.50
Electric Hog Ringers doz \$2.00
Major Ringers doz \$1.25
Major Ringers doz \$2.00

Rivets and Burrs—

Norway Iron, t Nov. 17, '87 60¢@10¢
Second quality 70¢
Copper 60¢@10¢
Coppered Iron, Bettina Brand 60¢@10¢

Rivet Sets—See Sets.**Roasting and Baking Pans—See Pans, Roasting and Baking.****Rods—**

stair, Brass 25¢@30¢
stair, Black Walnut doz 40¢

Rollers—

Barn Door, Sargent's list 60¢@10¢@10¢
Acme Moore's Anti-Friction 55¢
Union Barn Door Roller 70¢
Thompson Mfg. Co.'s Lawn Rollers 30¢

Rope—

The following prices are for b. n. New York or factory, and are shaded 1/4¢ on large lots; terms, 1 1/2% for cash.
Manila, 7-16 in. diam. and larger 9¢
Manila, 1/4 and 5-16 in. 10¢
Manila, Tarred Rope 9¢
Manila, Hay Rope 9¢
Sisal, 7-16 inch and larger 7 1/2¢
Sisal, 1/4 and 5-16 in. 8 1/2¢
Sisal, Hay Rope 7 1/2¢
Sisal, Tarred Rope 7 1/2¢
Sisal, Medium Lath Yarn 7 1/2¢
New Zealand, 7-16 in. & larger 7 1/2¢
New Zealand, 1/4 and 5-16 inch, New Zealand, Hay Rope 7 1/2¢
New Zealand, Tarred Rope 6 1/2¢
Cotton Rope 13¢@16¢
Jute Rope 6 1/2¢@7¢

Wire—

List February, 1892. All kinds 45¢

Rules—

Boxwood 80¢@10¢@10¢
Ivory 50¢@10¢
Starrett's Steel Rules and Straight Edges 25¢@10¢

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—**

See Paper and Cloth.

Sash Cord—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.**Saws—**

Disston's Circular 45¢@45¢@5¢
Disston's Cross Cut, list Jan. 1, '93, 40¢@10¢
Disston's Hand 25¢
Hand, Panel and Rip 25¢@10¢
Cross Cuts, list Jan. 1, 1893 45¢@10¢
Wheeler, Madden & Clemson Mfg. Co. Hand, Panel and Rip 30¢@10¢
Cross Cuts, list Jan. 1, 1893 45¢@10¢
Atkins' Circular 50¢@10¢
Atkins' Cross Cuts, list Jan. 1, 1893 40¢
Atkins' Mulay, Mill and Drag 50¢@10¢
Atkins' One-Man Saw 40¢
Atkins' Wood Saws 40¢
Peace Circular and Mill 45¢@45¢@5¢
Peace Hand Panel and Rip 25¢@25¢@5¢
Peace Cross Cuts, list Jan. 1, 1893 45¢@10¢
Richardson's Circular and Mill 45¢@45¢@5¢
Richardson's X Cuts, list Jan. 1, 1893 45¢@10¢
Richardson's Hand, &c 25¢@25¢@5¢
C. E. Jennings & Co.'s brand 25¢

Hack Saws—

Griffin's, complete 40¢@10¢@50¢
Griffin's Hack Saw Blades 40¢@10¢@50¢
Star Hack Saws and Blades 25¢
Eureka and Crescent 25¢

Scroll—

Lester, complete, \$10.00 25¢
Rogers, complete, \$4.00 25¢
Barnes' Builders' and Cab Makers' \$15.00, 25¢
Barnes' Scroll Saw Blades 55¢

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scales—**

Hatch, Counter, No. 171, good quality doz \$18.00@19.00
Hatch, Tea, No. 161 doz \$6.50@7.00
Union Platform, Plain \$2.10@2.20
Union Platform, Striped \$2.40@2.50
Chatillon's Grocers' Trip Scales 25¢
Chatillon's Eureka 25¢
Chatillon's Favorite 40¢
Camille Turnbills 30¢@30¢@10¢
Riehl Bros.' Platform 40¢

Scale Beams—

See Beams, Scale.

Scissors, Fluting 45¢**Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.) 30¢@10¢
Box, 2 Handle doz \$2.25@2.50
Box, 2 Handle doz \$3.00@3.25
Defiance Box and Ship 20¢@10¢
Foot 50¢@10¢@50¢
Ship, Common doz \$3.50 net
Ship, R. I. Tool Co. 10¢

Screen Window and Door

Frames—See Frames

Screw Drivers—

See Drivers, Screw.

Screws—**Bench and Hand—**

Bench, Iron 55¢@10¢@55¢@10¢
Bench, Wood, Beech doz \$2.25
Bench, Wood, Hickory 20¢@10¢
Hand, Wood 25¢@10¢@25¢@10¢
Hand, Grand Rapids, list 35¢

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890 80¢@80¢@10¢
Coach and Lag, Gimlet Point, list Jan. 1, 1890 80¢@80¢@10¢
Hand Rail, Sargent's 70¢@10¢
Hand Rail, H. & B. Mfg. Co. 70¢@10¢
Hand Rail, Am. Screw Co. 75¢

Jack Screws—

Jack Screws, Millers Falls list, 50¢@50¢@10¢
Jack Screws, P. S. & W. 35¢
Jack Screws, Sargent's 70¢
Jack Screws, Stearns' 40¢@40¢@10¢

Cork—

Humason & Beckley Mfg. Co. 40¢@10¢@50¢
Williamson's 33¢@33¢@5¢
Detroit Cork Screw Co. 33¢@5¢

Machine—

Flat Head Iron 65¢
Round Head Iron 60¢

Wood—

List January 1, 1891.
Flat Head Iron 70¢
Round Head Iron 65¢
Flat Head Brass 70¢
Round Head Brass 65¢
Flat Head Bronze 70¢
Round Head, Bronze 65¢
Rogers' Drive Screws 82¢@5¢

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain 40¢@5¢@40¢@10¢
Grass 40¢@10¢@50¢

Scythe Snaths—

See Snaths, Scythe.

Sets—**Awl and Tool—**

Alken's Sets, Awls and Tools, No. 20, 3 doz \$10.00 60¢@60¢@5¢
Fray's Adj. Tool Eds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9 45¢
Millers Falls Adj. Tool Eds. 25¢
Henry's Combination Haft doz \$6.50
Stanley's Excelsior: No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50 30¢@10¢
Common Brad Sets, No. 42, \$10.50; No. 43, \$12.50 70¢@10¢@5¢

Nail—

Square gr. \$4.00@4.25
Round gr. \$3.25
Ruck 27¢
Cannon's Diamond Point gr. \$12, 20¢

Rivet—

Regular list 70¢

Saw—

Stillman's Genuine doz \$5.00@7.75, 40¢@5¢
Stillman's Pattern, Hand, doz \$3.25 55¢
Cross Cut, \$5.25 55¢
Common Lever doz \$2.00, 45¢@50¢
Morrell's No. 1, \$14.00 40¢@20¢
No. 11, \$15.00 40¢@20¢
Nos. 3 and 4, Cross Cut, \$22.50 40¢@20¢
No. 5, Mill, \$30.00 40¢@20¢
No. 10, \$15.00 40¢@20¢
Leach's, No. 0, \$8.00; No. 1, \$15 15¢@20¢
Nash's 20¢@10¢@20¢@10¢
Hammer, Hotchkiss \$5.50, 10¢
Hammer, Bemis & Call Co.'s new Pat. 45¢
Bemis & Call Spring Hammer 30¢@5¢
Bemis & Call Co.'s Plate 20¢
Bemis & Call Co.'s Cross Cut 30¢@5¢
Alken's Genuine \$13.00, 50¢@10¢@60¢
Alken's Imitation \$7.00, 40¢
Hart's Pat. Lever 20¢
Disston's Star 25¢
Leopold 40¢@10¢@50¢
Atkin's Lever doz No. 1, \$8.00
Atkin's Criterion doz No. 1, \$8.00
Croissant (Keller), No. 1, \$15.00 40¢
Avery's Saw Set and Punch 50¢
Kohler's Royal doz \$7.00
Kohler's Giant Royal doz \$12.00
Crescent doz \$3.00
Lloyd's Acme doz \$16, 40¢@10¢
Taintor Positive doz \$18, 50¢

Sharpeners, Knife—

Applewood Handles doz \$6.00, 40¢
Rosewood or Cocobola doz \$9.00, 40¢

Shaves, Spoke—

Iron 45¢
Wood 30¢
Bailey's (Stanley R. & L. Co.) 40¢@10¢
Stearns' 30¢@10¢
Cincinnati 25¢@10¢
Goodell's doz \$8.00 25¢

Shears—

American (Cast) Iron, 75¢@10¢@75¢@10¢
Barnard's Lamp Trimmers doz \$3.75
Seymour's, list Dec. 1881 80¢@10¢@60¢@10¢@5¢
Heinisch's, list Dec. 1881 60¢@10¢@60¢@10¢@5¢
Heinisch's Tailor's Shears 35¢@4¢
Cast Steel Trimmers: First quality 80¢@80¢@10¢
Second quality 80¢@10¢@80¢@10¢@10¢
Acme Cast Shears 40¢@10¢
Diamond Cast Shears 10¢
Clippers 10¢@10¢
Victor Cast Shears 75¢@10¢@75¢@10¢@5¢
Hove Bros. & Hulbert, Solid Forged Steel 40¢
Hull's Cutlery Co. Solid Steel Forged 60¢
Davenport Cutlery Co. 60¢@10¢@10¢
Clausen Shear Co., Japanned 70¢
Clausen Shear Co., Nickel, same list, 60¢
Galvanic 3/4 to 9 in., doz, \$1.00 1/2 inch
Electric Cutlery Co. Net
Campbell Cutlery Co., Jap'd 75¢
Nickel Plated 65¢

Timbers' Snips—

Wrt. Handles, Steel Blades 20¢@20¢@10¢
Niagara Snips and Shears 20¢@10¢
Cast Handles, Laid with Steel 40¢

Pruning Shears and Hook—

Disston's Combined Pruning Hook and Saw doz \$12.00, 20¢@10¢
Disston's Pruning Hook, doz \$12.00, 20¢@10¢
E. S. Lee & Co.'s Pruning Tools, 50¢@10¢@70¢
Pruning Shears, Henry's Pat., doz \$3.75@4.00
Henry's Pruning Shears, doz \$4.25
Wheeler, M. & C. Co., Combination doz \$12.00
Dunlap's Saw and Chisel, doz \$3.50, 30¢
J. Mallinson & Co., No. 1, \$5.25; No. 2, \$7.25
P. S. & W. Co. 60¢
Levin Pruner No. 1, \$15.00 doz, 40¢@2¢
Levin Pruner No. 2, \$21.00 doz, 40¢@2¢

Timbers', &c.—

Shears and Snips (P. S. & W.) 20¢@25¢
Snips, J. Mallinson & Co. 35¢@4¢

Sheaves—

M. W. Co., list July, 1888 50¢@10¢@60¢@5¢
R. & E., list Dec. 18, 1885 55¢@20¢
Corbin's list 60¢@10¢@3¢
Patent Roller 60¢@10¢@3¢
Patent Roller, Hatfield's 75¢
Russell's Anti-Friction, list Dec. 18, 1885 60¢@10¢
Moore's Anti-Friction 60¢

Sliding Shutter—

R. & E., list Dec. 18, 1885 60¢@10¢@3¢
Sargent's list 70¢
Reading list 60¢@10¢@10¢

Shells—

First quality 4, 8, 10 and 12 gauge 25¢@10¢@5¢
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (7.50 list) 20¢@10¢@3¢
Prize 40¢@10¢
Star, Club, Rival and Climax Brands 35¢@10¢@3¢
Smokeless brand, 12, 10, 16 gauge 35¢@10¢@3¢
Trap brand, 12 and 10 gauge 35¢@10¢@3¢
Selbold's Comb. Shot Shells 15¢@3¢
Brass Shot Shells, list quality 60¢@3¢
Brass Shot Shells, Club, Rival, Climax 65¢@3¢

Shells, Loaded—

Standard List, July 19, 1890 40¢@10¢@10¢@40¢@10¢@5¢

Ship Tools—

L. & I. J. White 20¢@25¢

Shoes, Horse, Mule, &c.—

Burden's, Perkins', Phoenix, Standard, Diamond State and Bryden's Boss, at factory \$4.00
Bryden's Frog Pressure, at factory, \$5.00

Mule—

Add 1¢ per keg to above prices.

Ox Wrought—

Ton lots 50¢@10¢
1000 lb lots 50¢@10¢
500 lb lots 50¢@10¢

Shot—

Drop, up to B, 25-m bag \$1.45
Drop, up to B, 5-m bag 35¢
Drop, B and larger, 25-m bag 1.70
Drop, B and larger, 5-m bag40
Buck and Chilled, 25-m bag40
Buck and Chilled, 5-m bag 1.70
Dust Shot, 25-m bag 2.00
Dust Shot, 5-m bag45

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 30¢
NOTE.—Jobbers frequently give 6¢ to 7¢ extra on above.
Griffith's Black Iron 50¢@10¢
Griffith's C. S. 60¢@60¢@25¢
Griffith's Solid C. S. R. R. Goods 20¢
St. Louis Shovel Co. 20¢@20¢@7¢
Hussey, Blins & Co. 15¢@5¢
Hubbard & Co. 20¢@20¢@7¢
Lehigh Mfg. Co. 60¢@10¢
H. M. Myers Co. 30¢
Payne, Pettibone & Son 30¢@25¢
Remington's (Lowman's Pat.) 40¢@10¢@5¢
Rowland's Black Iron, 60¢@10¢@50¢@10¢@5¢
Rowland's Steel 60¢@5¢@60¢@10¢
Terra Haute Shovel & 25¢

Shovels and Tongs—

Iron Head 60¢@10¢@60¢@10¢@5¢
Brass Head 60¢@10¢@10¢

Sieves—

Mann's Tin Rim 50¢@25¢
Buffalo Metallic, S. S. & Co. 50¢@25¢
Shaker (Barier's Pat.) Flour Sifters gr \$18.00@20.00
Electric Light, doz \$15.50; gr \$15.00
A. & W. Sifters gr \$15.00
Hunter's Genuine, doz \$17.75; gr \$16.50

Sieves, Wooden Rim—

Mesh 18, Nested, doz \$0.80
Mesh 20, Nested, doz95
Mesh 24, Nested, doz 1.15

Sinks, Wrought Steel—

Columbus, Painted or Unpainted 30¢@30¢@10¢
Columbus, Galvanized and Enamelled 50¢@50¢@10¢
New Era, Painted 40¢@10¢@50¢@5¢
New Era, Galvanized and Enamelled 60¢@10¢@10¢@70¢@5¢

Skins, Thimble—

Western list 75¢@5¢@75¢@10¢
Columbus Vrt. Steel, special net prices
Coldbrookdale Iron Co. 60¢
Seneca Falls Pattern 60¢
Utica P. S. T. Skins 60¢
Utica Turned and Fitted 60¢

Snaps, Harness, &c.

Anchor (T. & S. Mfg. Co.)	50¢
Fitch's (Erstol)	50¢
Hutchinson	10¢
Andrews	50¢
Sargent's Patent Guard	70¢
German, new list	50¢
Cover, New Patent	50¢
Cover, New R. E.	50¢
Covered Spring	60¢
Cover's Saddle Works' Triumph	33¢
John Prots Snaps	75¢

Snaths—

Scythe	50¢
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Soldering Irons—See *irons, Soldering.***Spittoons, Cuspidors, &c.****Standard Fiberware—**

Cuspidors, 8½-inch, # doz., No. 5, 8; No. 5, 8.	50¢
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, 8.	50¢

Spoke Shaves—See *Shaves, Spoke.***Spoke Trimmers—**See *Trimmers, Spoke.***Spoons and Forks—****Tinned Iron—**

Basting, Cen. Stamp. Co.'s list	70¢
Solid Table and Tea, Cen. Stamp. Co.'s list	70¢
Buffalo, S. S. & Co.	33¢

Silver Plated—

months or 5¢ cash 30 days:	
Meriden Brit. Co., Rogers	40¢
O. Rogers & Bros.	40¢
Rogers & Bros.	40¢
Reed & Barton	40¢
Wm. Rogers Mfg. Co.	40¢
Simpson, Hall, Miller & Co.	40¢
Holmes & Edwards Silver Co.	40¢
L. Boardman & Son	50¢

Miscellaneous—

Holmes & Edwards Silver Co.	
No. 87 Mexican Silver	50¢
No. 80 Silver Metal	50¢
No. 24 German Silver	50¢
No. 50 Nickel Silver	50¢
No. 49 Nickel Silver	50¢
Wm. Rogers Mfg. Co.	50¢
Rogers' Silver	50¢
13¢ Rogers' German Silver	60¢
22¢ Rogers' Nickel Silver	60¢
German Silver	50¢
German Silver, Hall & Elton	50¢
Nickel Silver	50¢
Britannia	50¢
Boardman's Nickel Silver, list July 1, 1891	60¢
Boardman's Britannia Spoons, case lots	60¢

Spring—

Torrey's Rod, 39 in.	1.20
Warner's No. 1, 1 doz	1.50
Gem (Coll), list April 19, 1886	20¢
Star (Coll), list April 19, 1886	20¢
Victor (Coll)	60¢
Champion (Coll)	60¢
Cowell's, No. 1, 1 doz	1.80
Rubber, complete, 1 doz	4.50
Mercuries	50¢
Phoenix	33¢

Carriage, Wagon, &c.

Eliphe, Concord, Platform and Half	
Scroll	60¢
Cliff's Bolster Springs	25¢

Squares—

Steel and Iron	80¢
Nickel-Plated	10¢
Try Square and T Bevels	60¢
Diston's Try Square and T Bevels	50¢
Winterbottom's Try and Niter	30¢
Starrett's Micrometer Caliper Squares	25¢
Avery's Flush Bevel Squares	40¢
Avery's Bevel Protractor	50¢

Squeezers—

Fodder—	
Blair's	1.25
Blair's "Climax"	1.25

Lemon—

oreclain Lined, No. 1	25¢
Wood, No. 2	30¢
Wood, Common	1.75
Dunlap's Improved	20¢
Sammis, No. 1, 50¢; No. 2, 30¢	
118 # doz	2.50
Jennings' Star	2.50
The Boss	2.50
Dean's, Nos. 1, 2, 3, 3.50; 3, 1.90; Queen, 2.50	
Little Giant	50¢
King	40¢
Hotchkiss Street Flash	12.00
Silver & Co., Glass	9.00

Standard Fiber Ware—See *Ware, Standard Fiber.***Staples—**

Barbed Blind, ¼ in. and larger	7.74
Barbed Blind, ¼ in.	8.84
Fence Staples, Galvanized	Same price
Fence Staples Plain	as per Wire
Grand Crossing Tack Co.'s list	75¢

Steelyards**Stocks and Dies—**

Blacksmith's	35¢
Waterford's Goods	35¢
Lightning Screw Plate	25¢
Reese's New Screw Plates	25¢
Reversible Ratchet	30¢
Gardner	25¢
Green River	25¢

Stops, Bench—

Morrill's, # doz., Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	12.00
Hotchkiss's, # doz., Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	12.00
Weston's, No. 1, 10 No. 2, 10 No. 3, 10 No. 4, 10 No. 5, 10 No. 6, 10 No. 7, 10 No. 8, 10 No. 9, 10 No. 10, 10 No. 11, 10 No. 12, 10 No. 13, 10 No. 14, 10 No. 15, 10 No. 16, 10 No. 17, 10 No. 18, 10 No. 19, 10 No. 20, 10 No. 21, 10 No. 22, 10 No. 23, 10 No. 24, 10 No. 25, 10 No. 26, 10 No. 27, 10 No. 28, 10 No. 29, 10 No. 30, 10 No. 31, 10 No. 32, 10 No. 33, 10 No. 34, 10 No. 35, 10 No. 36, 10 No. 37, 10 No. 38, 10 No. 39, 10 No. 40, 10 No. 41, 10 No. 42, 10 No. 43, 10 No. 44, 10 No. 45, 10 No. 46, 10 No. 47, 10 No. 48, 10 No. 49, 10 No. 50, 10 No. 51, 10 No. 52, 10 No. 53, 10 No. 54, 10 No. 55, 10 No. 56, 10 No. 57, 10 No. 58, 10 No. 59, 10 No. 60, 10 No. 61, 10 No. 62, 10 No. 63, 10 No. 64, 10 No. 65, 10 No. 66, 10 No. 67, 10 No. 68, 10 No. 69, 10 No. 70, 10 No. 71, 10 No. 72, 10 No. 73, 10 No. 74, 10 No. 75, 10 No. 76, 10 No. 77, 10 No. 78, 10 No. 79, 10 No. 80, 10 No. 81, 10 No. 82, 10 No. 83, 10 No. 84, 10 No. 85, 10 No. 86, 10 No. 87, 10 No. 88, 10 No. 89, 10 No. 90, 10 No. 91, 10 No. 92, 10 No. 93, 10 No. 94, 10 No. 95, 10 No. 96, 10 No. 97, 10 No. 98, 10 No. 99, 10 No. 100	12.00

McGill's, # doz	3.00
Cincinnati	25¢
Terrell's Nos. 1 and 2, # doz	3.00

Stone—**Scythe Stones—**

Pike Mfg. Co., list April, 1892	33¢
Cleveland Stone Co., list Nov. 1892	33¢

Oil Stones, &c.—

Pike Mfg. Co.	
Hindustan No. 1, # doz	8¢
Sand Stone	5¢
Turkey Oil Stone, 4 to 8 in.	40¢
Turkey Slips	2.00
Lily White Washita	60¢
Rosy Red Washita	60¢
Washita Stone, Extra	50¢
Washita Stone, No. 1	40¢
Washita Stone, No. 2	30¢
Lily White Slips	90¢
Rosy Red Slips	90¢
Washita Slips, Extra	70¢
Washita Slips, No. 1	50¢
Arkansas Stone, No. 1, 3 to 8 in.	50¢
Arkansas Stone, No. 1 ½ to 8 in.	3.50
Lake Superior	13¢
Lake Superior Slips	20¢

Stove Polish—See *Polish, Stove.***Stretchers, Carpet—**

Cast Steel, Polished	2.25
Cast Iron, Steel Points	75¢
Socket	1.75
Bullard's	25¢

Strops, Razor—

Genuine Emerson	40¢
Station " "	2.00
Torrey's	2.00
Badger's Belt and Com.	2.00
Lamont Combination	4.00
Jordan's Pat. Padded, list Nov. 1, '89	50¢
Electric Cutlery Co.	Net
Campbell Cutlery Co.	Net

Stuffer, Sausage—

Miles' Challenge, # doz	2.00
Perry, # doz, No. 1, #15.00, No. 0	50¢
Enterprise Mfg. Co., list Jan. 17, '93	25¢
Silver's	40¢

Sweepers, Carpet and Lawn—

Bissell No. 5	17.00
Bissell No. 8	20.00
Bissell, Grand	24.00
Domestic	22.00
Domestic, No. 2	22.00
Grand Rapids	24.00
Crown Jewel, No. 1	18.00
19.00; No. 2, 20.00	
Imperial Parlor Queen	25.00
Nickel	22.00
Jannaped	22.00
Excelsior	22.00
Garland	18.00
Parlor Queen	24.00
Swivel's Delight	24.00
Ladies' Friend	15.00
Ladies' Friend No. 2	16.00
Advance	18.00
Our Leader	19.00
Triumph	20.00
Goshen	22.00
Supreme	22.00
Easy	22.00
Gilt Edge	24.00
Acme	26.00
Imperial	28.00
Grand Republic	30.00
Banner	32.00
The Star	22.00
Reliable	22.00
The Rapid	22.00
Our Own	27.00
Model	27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rates:	
5 dozen in 6 months	1.00
10 dozen in 6 months	2.00
25 dozen in 6 months	3.00
Except on L.R., when 10 dozen price is \$13.50, and 25 dozen \$13.00.	

Lawn—

Thompson Mfg. Co.	30¢
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Swings—

Davies Lawn	25¢
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Tacks, Brads &c.—

List October 19, 1889. Old established straight weights. Short Weight goods sold at lower prices.	
Carpet Tacks	
American, Blued	60¢
American, Tin'd and Cop'd	70¢
Steel, Bright and Blued	60¢
Steel, Tinned and Coppered	70¢
Swedes Iron, Blued	72¢
Swedes Iron, Tinned	74¢
American Iron Tacks, Domestic	60¢
Swedes Iron Tacks	
S. S., Blued	60¢
S. S., Tinned	70¢
Lanc, Blued	55¢
Lanc, Tinned	60¢
Gimp and Lac Tacks	60¢
S. S., Blued	62¢
S. S., Tinned	68¢
Lanc, Blued	55¢
Lanc, Tinned	60¢
Basket and Trimmers' Tacks	52¢
Lanc	60¢
S. S.	60¢
Hungarian Nails	60¢
Common and Patent Brads	55¢
Leathered Tacks	10¢
Brush Tacks, S. S.	60¢
Looking Glass Tacks, S. S.	35¢
Picture-Frame Points, S. S.	55¢
Finishing Nails	60¢
Trunk and Clout Nails	
Black	62¢
Tinned or Coppered	68¢
Basket Nails	60¢
Chair Nails	52¢
Cigar Box Nails	45¢
Tin Capped Nails	50¢

Miscellaneous—

Double Point	90¢
Wire Carpet Nails	50¢
Claw Handle Carpet	1.00
Bonnie Blue	1.50

Bill Nye Brad Box	40
Parisian Gilt Nails, cartoon	50
Home Tacks, No. 50 # case (12 cartons), \$36.00; No. 100, # case (12 cartons), \$72.00	
Home Nails, No. 200, # case (12 cartons), \$30.00; No. 400, # case (12 cartons), \$60.00	
Upholsterers' Nails	50¢

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list	50¢
See also <i>Nails, Wire.</i>	

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. \$8.75; 60-gal. \$11 each	50¢
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Tapes, Measuring—

American	40¢
Spring	40¢
Chesterman's, Regular list	25¢

Thermometers—

Tin Case	80¢
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Thimble Skeins—See Skeins.**Ties, Bale—Steel.**

Standard Wire, list	50¢
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Tinners' Shears, &c.—See *Shears, Tinners' &c.***Tinware—**

Stamped, Japanned and Placed, list Jan. 20, 1887	70¢
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Tire Benders, Upsetters, &c.—See Benders and Upsetters.**Tire.****Tobacco Cutters—**See *Cutters, Tobacco.***Tools—**

Coopers'—	
Bradley's	20¢
Barton's	20¢
L. & J. White	20¢
Albertson Mfg. Co.	25¢
Beatty's	30¢
Sandusky Tool Co.	30¢
Shaves Cincinnati Tool Co.	20¢

Lumber—

Ring Peavies, "Blue Line"	20.00
Ring Peavies, Common	18.00
Steel Socket Peavies	21.00
Mail Iron Socket Peavies	19.00
Cant Hooks, "Blue Line"	16.00
Cant Hooks, Common Finish	14.00
Cant Hooks, Mail, Socket Clasp, "Blue Line"	16.00
Cant Hooks, Mail, Socket Clasp, Common Finish	14.50
Cant Hooks, Clip Clasp, "Blue Line"	14.00
Cant Hooks, Clip Clasp, Common Finish	12.00
Hand Spikes	16.00
Pike Poles, Pike & Hook, # doz, 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50	
Pike Poles, Pike only, # doz, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$19.00	
Pike Poles, not ironed, # doz, 12 ft., \$8.00; 14 ft., \$9.00; 16 ft., \$10.00; 18 ft., \$12.00; 20 ft., \$14.00	
Sitting Poles, # doz, 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00	
Swamp Hooks	18.00

Saw—

Atkins', new list	40¢
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Transom Lifters—See *Lifters, Transom.***Traps—**

Game—	
Newhouse	40¢
Oneda Pattern	70¢
Game, Blake's Patent	40¢

Mouse and Rat—

Mouse Wood, Choker, # doz holes, 9@10	
Mouse, Round Wire.....	1.50
Mouse, Cage, Wire.....	2.50
Mouse, Catch-'em-alive.....	2.50
Mouse, Bonanza.....	1.00
Rat, Decoy.....	1.00
Ideal.....	1.00
Cyclone.....	1.00
Hotchkiss Metallic Mouse, 5-hole trap, 75¢ in fun.	1.00
Hotchkiss Imp. Rat Killer.....	1.50
Hotchkiss New Rat Killer.....	1.50
Schuyler's Rat Killer.....	1.50
Dandy.....	1.75
Waddell's Go Bang, 2¢ gro.	12.50

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